THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—12TH YEAR. SYDNEY: SATURDAY, JUNE 6, 1925. No. 23.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— PAGE.
"Cancer and Acquired Resistance to Tuberculosis," by THOMAS CHERRY, M.D., M.S. .. 581
REPORTS OF CASES—
"Hirschsprung's Disease," by R. B. WADE, M.D., Ch.M. .. 598
ANALYTICAL DEPARTMENT—
"Iodentone Tooth Paste (Iodized)" .. 598
LEADING ARTICLES—
The Profession and the State .. 599
CURRENT COMMENT—
Tetanus Antitoxin .. 600
Measles .. 601
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—
Ophthalmology .. 602
Laryngology and Otology .. 603
BRITISH MEDICAL ASSOCIATION NEWS—
Medico-Political .. 604
Nominations and Elections .. 604
MEDICAL POLITICS—
National Health Insurance .. 604
OBITUARY—
Eric Sinclair .. 607
UNIVERSITY INTELLIGENCE— PAGE.
The University of Sydney .. 609
PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—
Victoria .. 610
Queensland .. 611
Tasmania .. 611
CORRESPONDENCE—
Chronic Sinusitis .. 611
The Control of Surgeons .. 611
POST-GRADUATE WORK—
Prize Essay on the Prevention of Maternal Mortality .. 611
RESEARCH WORK—
Research in Obstetrics .. 611
THE BOY SCOUT MOVEMENT .. 612
BOOKS RECEIVED .. 612
MEDICAL APPOINTMENTS .. 612
MEDICAL APPOINTMENTS VACANT, ETC. .. 612
MEDICAL APPOINTMENTS: IMPORTANT NOTICE 612
DIARY FOR THE MONTH .. 612
EDITORIAL NOTICES .. 612

CANCER AND ACQUIRED RESISTANCE TO TUBERCULOSIS.[1]

By THOMAS CHERRY, M.D., M.S. (Melbourne),
Cancer Research Fellow of the University of Melbourne.

II.

THE results of the analysis of the deaths by occupations in my first paper (THE MEDICAL JOURNAL OF AUSTRALIA, October 11, 1924) may be summarized as a proposition.

1. In each occupation the incidence of phthisis between the ages of twenty-five and forty-five is correlated with the incience of cancer at all ages.

The present paper is based on the analysis of all the deaths registered in England since 1841. The following propositions emerge in succession:

2. The combined mortality rate of phthisis and cancer has varied little for the past thirty years.

3. Since 1851 the two diseases have regularly caused 20% of all deaths after the age of twenty-five.

4. By following to old age the history of the young adults that formed at each successive census the age group 15—24 or 25—34, it will be found that the total deaths from the two diseases form a nearly constant percentage of the numbers so enumerated. The increase in cancer balances the reduction in phthisis.

5. As the numbers by which phthisis is being reduced, are balanced by the increasing numbers of those who die of cancer, so the percentage rates in each census unit are correlated in a way that points to a close relationship in the conditions which cause the two diseases.

6. The statistical evidence available from other countries seems to confirm these English results.

7. Converging lines of evidence tend to show that cancer attacks the moiety of the 20% of those who have not died of phthisis.

8. The correlation between the two diseases is so intimate that a new definition may be submitted for experimental investigation:

Cancer is in most cases the expression of the resistance of the cells to a second or subsequent invasion by the *Bacillus tuberculosis*.

Taking first the incidence of the two diseases we find that in England when calculated for all ages and both sexes the sum of the rates has remained nearly constant for thirty years.

[1] The first portion of this article appeared in THE MEDICAL JOURNAL OF AUSTRALIA of October 11, 1924, page 372.

TABLE I.—RATES PER MILLION OF POPULATION (ALL AGES).

Period.	Phthisis.	Cancer.	Totals.
1891-1895 ..	1,461	712	2,173
1896-1900 ..	1,323	800	2,123
1901-1905 ..	1,218	867	2,085
1906-1910 ..	1,106	939	2,045
1911-1915 ..	1,046	1,054	2,100
1916-1920 ..	1,104	1,179	2,283
1921-1923 ..	830	1,237	2,067

A similar compensating movement is also seen in the rates of several other countries and it has been noticed more than once by statisticians during the present century. At the meeting of the Australasian Medical Congress held at Hobart in 1902, Sir T. Coglan, at that time Government statistician, read a paper based on the New South Wales records for the preceding fifty years. He held that subsequently to 1874 the diagnosis and registration of the two diseases had been reasonably accurate and strongly maintained the reality of the apparent increase in cancer. At the Congress this was the main point at issue (see Note I. at the end of this article).

After dealing with his principal subject Coglan continued:

> This leads me to a part of my subject which I approach with diffidence. I desire now to place before you certain statistics which would seem to connect, in some way, the increase of cancer with the decrease of tuberculosis. I have taken out the deaths from cancer and tuberculosis for each year of life during the last twenty-five years. It will be apparent that the resultant rates in each age group have strikingly constant values and the fact that they are related to the same standard of observation removes any suspicion that they are the result of accident, for a different distribution of population would produce like results. The question therefore naturally presents itself, whether persons who under the conditions of life and of medical science in 1876 would have fallen a prey to tuberculosis, but did not, have not at a later period provided some of the material from which our cancer rate has been recruited. I believe it is a medical axiom that "morbid diathesis is necessary for the disease weeds to spread." Then, may not the morbid condition under which in former years phthisis was produced, have supplied the conditions under which cancer might, and does, flourish. In other words, are cancer and tuberculosis to be considered as complementary diseases? No other combination of causes of death exemplifies the peculiarities herein noted and no other causes are complementary of one another, the increase in one being modified by the decrease in the other, so as to produce a regular rate for each age group. I do not know that the facts in connexion with the rates for cancer and tuberculosis have ever been pointed out before; in any circumstances, they are remarkable.
>
> To beware of coincidences is an axiom which the statistician early learns. In the course of his investigations he meets so many seeming analogies which extended observations prove baseless, that he is instinctively on his guard lest he should accept as true everything having the appearance of truth. The figures I have given cannot reasonably be treated as merely accidental. They cover too wide a field and are over too extended a period to be thus lightly brushed aside. The probabilities against the rates being due to mere coincidence are overwhelming. Nevertheless, I do not claim more than that the apparent association of the two diseases, shown by the death rates, should be investigated. The figures cannot be decided upon by a mere *a priori* assumption that the causation of the diseases is entirely dissimilar and therefore a connexion between them is impossible. If the death rates moved equally in the same direction, they might be considered as governed by an exterior cause, but moving, as they do, regularly in opposite directions, some other explanation must be proposed to account for the phenomena.

I regret that I came across this prophetic paper only a few weeks ago; otherwise it might have led me direct to the right track and saved long excursions into mazes of figures relating to irrelevant diseases.

In 1917 J. W. Butcher, Chief Compiler, Statists Office, Wellington, published a paper on cancer mortality in New Zealand, in which he gives a diagram "with a view to showing clearly the very slight alterations in the aggregate rates for the two diseases over the period" from 1872 to 1916. He does not think that the two phenomena are connected except that "the fall in tuberculosis as a representative and principal disease of early life involves a higher mortality from cancer and other diseases of later life."

Incidentally it may be said that Table XII. in my former paper, dealing with the incidence of cancer and apoplexy, shows that cancer cannot be classed along with the other diseases of later life, while Table VII. shows that cancer before the age of forty-five in men also follows the same law as that which governs its incidence throughout the later age groups.

Turning now to the combined rates in England (Table I.) we notice that the great epidemic of influenza in 1918 increased the phthisis rate for the corresponding period, but it did not affect the cancer rate. Moreover the rates since 1914 have been modified by the war. This not only made a reduction in the numbers of the men of military age, but the rates for the five years are raised because they refer to civilian population only. Notwithstanding these disturbing factors the combined rates are very much nearer an identity than those for New South Wales and New Zealand and they are based on nearly forty times as many deaths as either of these. By making the year 1891 the starting point of this survey the question of dignosis is simplified in regard to both diseases. That of phthisis was placed on its present footing by the discovery of the bacillus and soon after 1891 the routine examination of material for the bacillus became the general practice. The apparent effect of this was to transfer a proportion of the deaths from bronchitis to phthisis. This influenced the rates after the age of fifty-five and it will receive further attention later on. In regard to cancer a sharp rise in the rates due presumably to more accurate diagnosis occurred between the years 1885 and 1900, as was noticed in Table I. of the first paper. The rise in the percentage increase from 11.0 to 15.3 may reasonably be ascribed in part at least to improved diagnosis; but this explanation will not account for the rise from 8.3 to 12.2 in 1911.

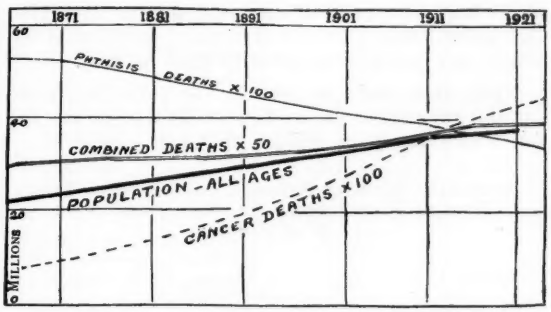
In the first paper I showed that both diseases are placed in a false position when the death rates are

calculated for all ages. Phthisis is not evenly distributed throughout the whole period of life and at present the incidence of cancer to the extent of nine-tenths of all the deaths falls after the age of forty-five. If the diseases have a compensating relationship the sum of the rates ought to approximate more closely as we remove the disturbing factors in succession. Two of these appear to be obvious: the abnormal war conditions and the varying incidence of both diseases in men and women. Accordingly the combined rates approach nearer to a constant when calculated separately for each sex and when the war years are left out. In the following table the rates include acute phthisis, but not acute miliary tuberculosis, both of which have been enumerated separately since 1911.

TABLE II.—RATES PER MILLION OF POPULATION (ALL AGES).

Period.	Men.			Women.		
	Phthisis.	Cancer.	Combined.	Phthisis.	Cancer.	Combined.
1886-1890	1,781	474	2,255	1,497	782	2,279
1891-1895	1,633	547	2,180	1,633	547	2,180
1896-1900	1,529	650	2,179	1,130	942	2,072
1901-1905	1,434	725	2,159	1,009	1,000	2,009
1906-1910	1,299	819	2,118	926	1,052	1,978
1911-1914	1,198	934	2,132	860	1,134	1,994
1919-1923	1,020	1,110	2,130	775	1,231	2,006

Hence after making due allowance for errors in diagnosis we must accept the close approximation of the official rates as the representation of a reality. For some reason the increase in cancer has nearly balanced the reduction in phthisis. We may if we choose regard it as a chance coincidence but the rates themselves and therefore their aggregate can hardly have been greatly modified by the average improvement in diagnosis which may have taken place since 1895. This equality of the combined rates is not found at periods earlier than 1891-1915. The aggregate begins to increase, reaching 2,850 in 1866—1870. This is due to the much higher phthisis rate steadily increasing the combined total in spite of the much lower cancer rate. But modern accuracy of diagnosis would have made both rates somewhat higher still and thus have further increased the discrepancy. At first it may appear that this explanation goes to show that the equality of the past thirty years is merely due to chance. For if the equality is caused by the compensating action of the two diseases, their joint incidence in relation to the mean population must have changed about the year 1890. That this is the explanation of the facts is clear from Graph I. The number of deaths from phthisis and cancer has had a constant relation to the increasing population for thirty years, but not more. For that period the joint curve has kept almost parallel with the population curve, but the lines for phthisis and cancer separately have nothing in common with it. We shall shortly be in a position to show why the change took place and thus prove that the correlation is not a chance coincidence.



GRAPH I.
Population in Relation to Combined Deaths. The combined deaths on the average have been about 2% of the population since 1895. The curves for Phthisis and Cancer intersect at 1914 because they then furnished equal numbers to the combined deaths.

The correlation of the two diseases is confirmed by the near equality of the combined rates and by the fact that they approximate more nearly as the disturbing factors are removed. In men this correlation first came to light as a result of the analysis of the deaths in various occupations. The combined rates make it probable that the two diseases are in some way related in women also. We may refer to these facts as:

PROPOSITION II.

The Sum of the Combined Rates Has Varied Little for Thirty Years.

Before proceeding further with the analysis of the deaths contained in the annual reports it is necessary to decide on the numbers that should be added to the recorded deaths in order to make the accuracy of diagnosis approximate to our present standard. For reasons which are set out in Note II. at the end of this paper the following scale has been adopted: Cancer, earlier than 1881 is increased by 20%; between 1881 and 1890 by 12.5%; between 1891 and 1900 by 4%. Phthisis above the age of fifty-five has been increased by 10% in all reports earlier than 1900 in order to compensate for the change in the diagnosis "bronchitis" which was brought about by the discovery of the bacillus.

PROPOSITION III.

The "Twenty Per Cent. Ratio."

Phthisis and cancer combined have caused a nearly uniform proportion of all the deaths in adult life since 1851.

During the seventy-three years 1851 to 1923 inclusive the number of deaths above the age of twenty-five from all causes registered in England and Wales was 19,978,696; of these 2,297,490 were due to phthisis and 1,475,034 to cancer. The combined deaths are, therefore 18.8% of the total deaths

in adult life. These figures require to be corrected by the addition of 79,448 for cancer and the transfer of 23,659 from bronchitis, in accordance with the scale just set out. Again, deaths from external causes other than suicide require to be removed from the total deaths. Accidents sometimes form more than one-tenth of the total deaths in a given age group, but they are unevenly distributed and affect men much more heavily than women.

Upon this basis we obtain the following result for the successive five year periods, except the first for which ten year figures only are available.

TABLE III.—RATIO OF PHTHISIS AND CANCER TO TOTAL DEATHS, EXCEPT ACCIDENTS, AGES TWENTY-FIVE YEARS AND UPWARD.

Period.	Men.	Women.	Persons.
1851-1860 ..	19.53	21.68	20.60
1861-1865 ..	19.29	21.46	20.37
1866-1870 ..	19.70	21.45	20.57
1871-1875 ..	19.05	20.29	19.67
1876-1880 ..	19.39	20.55	19.97
1881-1885 ..	19.46	20.20	19.83
1886-1890 ..	19.40	19.63	19.51
1891-1895 ..	18.63	18.22	18.42
1896-1900 ..	20.15	19.45	19.80
1901-1905 ..	20.39	19.50	19.94
1906-1910 ..	20.52	19.53	20.02
1911-1915 ..	20.72	20.01	20.36
1916-1920 ..	20.30	20.12	20.21

The percentages for 1891-1895 are the lowest of the series in both sexes. This is a result of epidemic influenza which raised the total deaths in that period and thus reduced the size of the quotients. On the other hand, influenza in 1918 has apparently had the effect of compensating for the reduction in the total deaths at ages between twenty-five and fifty-five which had been caused by the enlistment of this section of the population and its transfer to France.

The "twenty per cent. ratio" is not a mortality rate and it has no direct application to the living population. It simply establishes the fact that amongst adults one death in every five has been caused by phthisis or cancer and that the increase in cancer has almost exactly compensated for the reduction in phthisis. This compensation has been a very intricate process for the proportion of deaths caused by phthisis and cancer respectively has completely changed since 1861. At that time phthisis caused 40% of all deaths between the ages of twenty and forty-five; at the present time the percentage has been reduced by one-half. The increase in the number of deaths from cancer is more significant than the increase in the rate because the proportion of the population above the age of forty-five is also steadily increasing. In 1841 it was 17.6%; it is now 25.4%. These changes are more evident in the case of women for whom Table III. shows the changes in the deaths caused by each disease at an interval of fifty-five years.

TABLE IV.—PERCENTAGES OF TOTAL DEATHS CONTRIBUTED BY PHTHISIS AND CANCER (WOMEN).

Age Group.	Phthisis.		Cancer.	
	1861-1865.	1916-1920.	1861-1865.	1916-1920.
25-34	45.8	25.5	1.65	2.8
35-44	32.6	19.8	5.4	12.0
45-54	18.5	9.4	9.7	21.3
55-64	7.5	3.7	7.7	21.1
65 to end..	1.2	0.67	3.0	10.6

There is great regularity in the reduction of phthisis and the increase of cancer for all age groups in every ten-year period. Frequently the compensating changes in the number of deaths go on side by side without a break for a long succession of single years. Phthisis was much heavier on women than on men until the year 1861 or a little later. Since that date the position of the sexes has been reversed. Women escaped from phthisis, but encountered the increase in cancer considerably earlier than was the case with men. In the twenty years 1851—1870 cancer killed on the average sixteen men to thirty-three women; at the present time the proportion is twenty-seven men to thirty-three women.

We are thus able to establish Proposition III. Since 1851 the two diseases have regularly caused 20% of all deaths after the age of twenty-five.

Calculated in the same way the corresponding ratio for Scotland is 19.60%. This number has been maintained in each five-year period with remarkably little variation since 1871. (See Note III. at the end of this article).

PROPOSITION IV.

The Census Units.

Phthisis and cancer have caused the deaths of approximately the same percentage of the young adults enumerated at each of the five census years 1841 to 1881 inclusive.

Further light may be thrown on the problem by taking a special unit of the population and tracing the incidence of both diseases upon its members for as many successive ten-year periods as possible. The age group 25—34 enumerated at the census of 1841, becomes the group 35—44 ten years later and so on. We shall refer to such an age group as a census unit. My object is to find what proportion of the young adults enumerated at each census ultimately died of either phthisis or cancer. The number of census units which can be traced, depends upon the age groups at which we start and finish. The later in life a unit is traced, the higher is the percentage of these deaths, but as registration began in 1838, only three units can be followed to the age of eighty-five. After corrections for diagnosis are made, the deaths are a fairly constant proportion

of the mean population for the ten-year period which follows the census. If the net loss by emigration could be ascertained the percentages would be closer still. Men give somewhat closer results than women because emigration of young men has been fairly uniform since 1850, whereas women have emigrated in greatly increased numbers only during the past thirty-five years. The following are the results when the survey extends over seven, six and five ten-year periods.

TABLE V.—PERCENTAGE OF PHTHISIS AND CANCER IN THE CENSUS UNITS.

Ages Involved.		1841.	1851.	1861.	1871.	1881.
15 to 85 ..	Men	19.3	19.7	20.2	—	—
	Women	21.2	21.4	20.5	—	—
15 to 75 ..	Men	18.3	18.4	18.7	18.0	—
	Women	20.0	19.8	18.2	17.1	—
25 to 75 ..	Men	16.4	17.0	17.7	17.8	17.6
	Women	17.9	17.8	17.8	16.2	15.6

Although the percentage has not changed greatly, the proportions of the deaths contributed by phthisis and cancer have completely altered While the population has been steadily increasing, the actual number of deaths from phthisis has decreased, while those from cancer have increased much faster than the population. For example, in the census units for men (ages 15—75) that for 1841 comprised 235,928 cases of phthisis and 92,321 of cancer. At an interval of thirty years the corresponding unit for 1871 comprised 200,118 cases of phthisis and 193,361 of cancer.

In view of the existence of the "Twenty Per Cent. Ratio" it is not surprising to find that so far as the census units can be tested those who have died of the two diseases comprise a fairly uniform percentage. The increase of cancer amongst the members of the later units has compensated for the reduction in phthisis as compared with the earlier units. Men and women are alike in this experience, so that if chance coincidence is invoked to explain the one set of correlations, it must explain the double set also.

The Three Numerical Coincidences.

I shall next consider the general significance of the three sets of numerical coincidences which have been proved to exist in the relationship of the two diseases. In the first place it is much more difficult to explain them as unrelated than as related phenomena, because the percentages are quotients of independent sets of divisors and dividends. The dividends are all some combination of deaths from phthisis and cancer, but they are grouped differently in each case. The divisors have nothing to do with each other. This may be shown by placing the dividend and divisor above and below a common line as in the following scheme:

$$\textit{Combined Mortality Rates} = \frac{A}{B}$$

A signifies all deaths from phthisis and cancer in a five-year period; *B* signifies the mean population at all ages and at the same period.

$$\textit{"Twenty Per Cent. Ratio"} = \frac{C}{D}$$

C signifies the deaths from phthisis and cancer of persons aged twenty-five and over in five-year period; *D* signifies deaths from all causes except accident at the same ages and at the same period.

$$\textit{Census Unit} = \frac{E}{F}$$

E signifies all deaths from phthisis and cancer in life history of divisor; *F* signifies the mean population of a given age at the census epoch.

In addition to the variable factors already mentioned there are a number of others each of which is of weight in deciding the incidence of phthisis and cancer. Thus between 1851 and 1921 the population of England rose from eighteen to thirty-eight millions. In 1851 there were 1,838,000 persons over the age of fifty-five and in 1921 this number had increased to 5,206,000, while the preponderance of women had risen from 365,000 to 1,720,000. These changes of themselves would make it difficult for two unrelated causes of death to keep up an exactly balanced compensating action. Yet phthisis and cancer have accomplished much more than the mere solution of that problem. In the ten years 1851-1860 they caused 570,000 deaths of which phthisis contributed exactly 89%. In the ten years 1911-1920 the combined deaths were about 800,000 of which each disease contributed one-half. Meanwhile the general death rate had fallen from 22.2 to 14.3 per thousand living and yet we find that whether the standard of reference be the living population or the total deaths registered in a given period, the increase of cancer has exactly balanced the reduction in phthisis. The "Twenty Per Cent. Ratio" has held good for so long a period that, if I may use antiquated language, the population of England has been saturated with some morbid diathesis to such an extent that exactly one death out of every five is assigned by fate to the one cause or the other.

PROPOSITION V.

The Sum of the Percentage Rates.

When dealing with the occupations I found that the deaths from phthisis and cancer ran parallel courses, the latter being high or low in accordance with the earlier experience of phthisis. In the census units I am following the changes in a section of the population which embraces all individuals of the same age irrespective of occupation. In these the combined deaths conform to the "Twenty Per Cent. Ratio," so that high phthisis in early adult

life is associated with low cancer at the end and *vice versa*. But the rates derived from the deaths are in some way very closely associated. In the four census units to which the test can be applied, the combined rates in early life balance numerically with those in later life and in the case of women the sum of these rates, when taken for a period of seventy years, in each case approaches a constant.

Instead of selecting the deaths belonging to a given census unit in each ten-year period we take the corresponding rate. Each of these rates has been calculated by the method of "numbers exposed to risk" not as a member of a census unit, but as a member of the ten-year group with which it is associated.

In analysing the deaths by this method the number exposed to risk consists of the total deaths from all causes except accident from the beginning of a given age group to the end of life. For example, the rate for cancer in the age group 45-54 is found by expressing the number of deaths from cancer in this age group as a percentage of the total deaths after the age of forty-five. This percentage is the rate on the numbers exposed to risk because each individual who reached the age of forty-five might have died of cancer before reaching the age of fifty-five. (See Note IV. at the end of this article.)

Lifting the percentage rate belonging to a given census unit from its place in the ten-year tables the complete record of each series may be arranged as in Tables VI. and VII.. The upper of the two larger numbers in each square is the phthisis and the lower the cancer rate per 10,000. The numbers above and below the larger ones are the added corrections for phthisis and cancer respectively. (See Note V. at the end of this article.)

The rates for women cover the whole period of life from fifteen years to the end. Those for men cover from fifteen to seventy-five; the probable reason for this difference will appear later. I shall

TABLE VI.—THE CENSUS UNIT RATES (MEN).*

Age Group.	Year. 1841.	1851.	1861.	1871.	Ten-Year Period.
15—24 ..	648^1 5^2 1^4				1841—1850
25—34 ..	612^1 10^2 2^4	546^1 3^2			1851—1860
35—44 ..	538^1 26^2 5^4	582^1 8^2 2^4	490^1 4^2 1^4		1861—1870
45—54 ..	428^1 78^2 16^4	511^1 30^2 6^4	521^1 10^2 2^4	388^1 3^2	1871—1880
55—64 ..	28^3 278^1 220^2 27^4	395^1 113^2 15^4	467^1 39^2 5^4	458^1 12^2 1^4	1881—1890
65—75 ..	12^3 125^1 419^2 16^4	25^3 253^1 306^2 12^4	372^1 145^2 6^4	429^1 53^2 2^4	1891—1900
	3,494	129^1 566^2	251^1 414^2	360^1 203^2	1901—1910
		3,502	105^1 700^2	220^1 492^2	1911—1920
			3,542	86^1 836^2	1921—1930
				3.543	

TABLE VII.—THE CENSUS UNIT RATES (WOMEN).*

Age Group.	Year. 1841.	1851.	1861.	1871.	Ten-Year Period.
15—24 ..	713^1 5^2 1^4				1841—1850
25—34 ..	698^1 21^2 4^4	641^1 4^2 1^4			1851—1860
35—44 ..	524^1 90^2 18^4	652^1 24^2 5^4	575^1 4^2 1^4		1861—1870
45—54 ..	290^1 209^2 42^4	448^1 105^2 21^4	530^1 26^2 5^4	463^1 3^2	1871—1880
55—64 ..	15^3 153^1 342^2 42^4	247^1 245^2 30^4	373^1 116^2 15^4	443^1 27^2 4^4	1881—1890
65— ..	8^3 80^1 811^2 32^4	12^3 124^1 411^2 16^4	198^1 281^2 12^4	299^1 125^2 5^4	1891—1900
	4,098	82^1 $1,041^2$	115^1 487^2	178^1 316^2	1901—1910
		4,109	71^1 $1,228^2$	97^1 520^2	1911—1920
			4,037	60^1 $1,500^2$	1921—1930
				4.040	

* The rates in the squares adjoining horizontally belong to the same ten-year period (shown in the right hand column). The diagonal arrows join squares of the same age group (shown in the left hand column).

1 = Phthisis rate. 2 = Cancer rate. 3 = Correction for Phthisis. 4 = Correction for Cancer

Note.—The last age group in Table VII. runs from 65 to end.

now consider in detail the conditions which must be fulfilled in order to produce these results.

It will be seen that the reason why the numbers can be so arranged that they give this result is that the decreasing rate for phthisis in the early life history of each census unit is balanced by the increasing rate for cancer in the later years. The central point is somewhere about the age of forty-five for men and fifty-five for women. The essential fact is that this central point is near the same age in all the census units to which the test can be applied.

Omitting the corrections there are twelve numbers in the column of each census unit, six for each disease, or forty-eight in the whole series. No two of these forty-eight numbers have any direct relation to each other, for each is the quotient of an unrelated dividend and there are twenty-four unrelated divisors, one for each square. Under such circumstances in order that numbers which are percentages, should by addition produce the same total in each column the following conditions must be fulfilled: (i.) The sum of the twelve dividends forming each column must have a uniform ratio to the sum of the six corresponding divisors; (ii.) the quotients must either be approximately equal or they must be distributed in such a way that the small numbers are uniformly balanced by the large ones in each column.

Our dividends are the total deaths from phthisis and cancer combined, which occur in the history of each census unit. The succession of the divisors is explained by reference to the foregoing tables. For instance, in the unit for 1871 the top square represents the age group 15-24 in 1871-1880; the second square that for 25-34 in 1881-1890; the third, 35-44 in 1891-1901 and so on. Each divisor, therefore, consists of the number exposed to risk in the ten-year period and the age group to which it belongs. As I have said, no two of them are alike. Table VIII. gives details for the four census units. As the percentages of the divisors formed by the dividends is nearly uniform for each sex the first of the two conditions is satisfied.

In regard to the second condition it is evident that the quotients are not approximately equal, nor can they be made equal by adding together the rates for the two diseases in each square. The high and low numbers in each column must therefore be so distributed that they balance one another throughout the whole series. That this is so may be demonstrated by taking the problem in two stages.

The first step is to convert the six double rates into three aggregates by adding together the numbers in the upper, middle and lower pairs of squares for men and by forming a middle aggregate of the age groups 45-54 and 55-64 in the case of women.

In this way we obtain an early, middle and late series of numbers derived from the original percentage rates.

TABLE IX.—AGGREGATES OF RATES IN CENSUS UNITS.

Census Year.	Men.			Women.		
	Early.	Middle.	Late.	Early.	Middle.	Late.
1841	1,278	1,091	1,125	2,074	1,093	931
1851	1,141	1,070	1,291	1,901	1,085	1,123
1861	1,028	1,034	1,470	1,645	1,093	1,299
1871	862	1,047	1,634	1,369	1,111	1,560

As the "middle" aggregate for each census unit has remained nearly stationary the explanation of the production of the constant must be that the reduction in the "early" aggregates in the successive census units has been regularly balanced by the increase in the "late" aggregates. If this is the case, then the combined deaths from the two diseases forming the dividends of the "early" and the "late" aggregates when taken together ought to constitute nearly the same percentage of each of several standards of comparison; nearly, because the small variation in the middle aggregates must be taken into account. The following data show that this is the case and therefore the second condition is satisfied.

Table X. supplies: (i.) The number of deaths from phthisis and cancer in the early and late aggregates of each census unit; (ii.) the total deaths from these diseases in each census unit; (iii.) the percentage of (i.) to (ii.); (iv.) the mean population of the age group 15-24 in each census unit; (v.) the percentage of (i.) to (iv.); (vi.) the totals of all the divisors by which the percentages of

TABLE VIII.—RELATION OF DIVISORS TO DIVIDENDS.

Census Year.	Census Unit.				Percentage.	
	Sum of Divisors.		Sum of Dividends.			
	Males.	Females.	Males.	Females.	Males.	Females.
1841	4,996,804	5,416,606	290,702	361,193	5.81	6.66
1851	5,607,300	6,027,470	323,320	385,582	5.76	6.39
1861	6,308,210	6,709,865	362,408	432,173	5.74	6.43
1871	6,942,018	7,346,310	399,231	467,112	5.75	6.35

TABLE X.—DATA FOR EARLY AND LATE AGGREGATES—MEN.

Census Year.	(i.) Deaths from Cancer and Phthisis in Early and Late Aggregates.	(ii.) Total Deaths from Cancer and Phthisis.	(iii.) Percentage.	(iv.) Mean Population of the Age Group 15 to 24.	(v.) Percentage.	(vi.) Totals of all the Divisors Used in Table VIII.	(vii.) Percentage.
1841 ..	191,332	290,980	65.7	1,586,930	12.0	4,996,804	3.81
1851 ..	213,645	323,319	66.0	1,743,466	12.2	5,607,300	3.81
1861 ..	245,238	362,091	67.7	1,927,384	12.7	6,308,210	3.88
1871 ..	268,408	398,700	68.0	2,208,626	12.2	6,942,018	3.90

Table VIII. are formed; (vii.) the percentage of (i.) to (vi.).

Tested against each of these three standards of comparison we find that the increase in cancer has balanced the reduction in phthisis. It is more than a coincidence that the combined deaths from phthisis and cancer should have maintained for seventy-five years a constant relationship to a number of unrelated standards which it is proper to use for purposes of comparison. By way of contrast the deaths from the two diseases when tested separately have no tendency to form a constant relationship to the same standards or to form a series containing any discoverable element of uniformity.

This line of reasoning explains how the percentages contributed by the two diseases produce the constants. I think this of itself is sufficient to dismiss all idea of a series of chance coincidences in two unrelated diseases. The rigorous solution of the problem requires the answer to the question: Why are the dividends and divisors always so related as to produce this result?

The dividends being the number of deaths from phthisis and cancer are regulated by two factors, the first of which is a corollary of the "Twenty Per Cent. Ratio." The total number of the combined deaths is always one-fifth of the total deaths above the age of twenty-five in any given period. As the portion of the fifth contributed by phthisis becomes less the portion contributed by cancer becomes greater. Hence the final dividends in each census unit are regulated by the proportion of the fifth of all persons surviving the age of twenty-five who are still alive after the age of sixty-five. In the period covered by this investigation these have all died of cancer. Cancer has regularly filled all the vacancies left by phthisis, but no more; otherwise the combined rate would have risen above 20%. The second factor is the uniform rate at which cancer has been substituted for phthisis. There have been no sudden epidemics of the one or unexpected reductions of the other disease. The lives saved from phthisis in early life are accounted for by cancer in old age. Hence the proportions of the deaths forming our early and late aggregates balance each other, while the middle aggregate has remained nearly constant.

The regulation of the size of the divisors is a more complex problem, but it is for the most part another corollary of the "Twenty Per Cent. Ratio." As will be seen from Graph II. the combined deaths in each five-year period have followed nearly the same course as the total deaths from all causes above the age of fifteen. Hence before the census unit for 1841 had run its course, the divisors had assumed the existing relationship to the dividends. I am unable to give a full explanation of this problem, but the mutual adjustment is facilitated in the oldest age group by the following factors:

(i.) As the deaths from phthisis have been steadily decreasing in number, the increase in the combined totals is due to cancer alone. The deaths from cancer occur mostly after middle life and the drift of the population towards old age becomes more evident at each successive census as the mortality from all causes is being regularly reduced. In this way the adjustment of the divisors (deaths after the age of fifty-five) is maintained to the increasing size of the dividends (deaths chiefly from cancer). Hence the "late" aggregate balances, but does not swamp the "early" aggregate in each census unit.

(ii.) The dividends are always the survivors of the same census unit. These same deaths are included in the corresponding divisors and form a regularly increasing moiety of each divisor as we approach old age. Both divisor and dividend for age group 75 consists exclusively of members of the same census unit. The divisors for age group 65 to the extent of 66% and that for age group 55 to the extent of 33% are composed of deaths belonging to their own census unit. This relationship helps to make the adjustment due to the "Twenty Per Cent. Ratio" more exact.

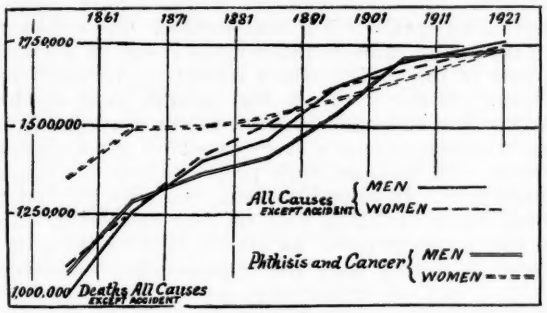
(iii.) The age distribution of the two diseases, phthisis falling before and cancer after the age of forty-five, leads to the transference of the deaths formerly found in the age groups 15-34 to one of the age groups after fifty-five. That is, the age distribution accounts for the middle aggregate remaining almost unchanged and for the conversion of the high "early" percentages in the old days into the correspondingly high "late" percentages at the present time.

(iv.) The last percentage has a controlling influence in adjusting the constant, because it is the quotient of a large dividend and the smallest divisor of the series. A given number of deaths in age group 15-24 produces only half the alteration in the percentage that it effects when transferred

TABLE Xa.—DATA FOR EARLY AND LATE AGGREGATES—WOMEN.

Census Year.	(i.) Deaths from Cancer and Phthisis in Early and Late Aggregates.	(ii.) Total Deaths from Cancer and Phthisis.	(iii.) Percentage.	(iv.) Mean Population of the Age Groups 15 to 24.	(v.) Percentage.	(vi.) Totals of all the Divisors Used in Table VIII.	(vii.) Percentage.
1841 ..	268,069	364,270	73.6	1,693,609	15.8	5,403,506	4.92
1851 ..	293,626	390,582	75.1	1,849,550	15.6	6,027,470	4.87
1861 ..	314,023	431,803	72.7	2,046,269	15.3	6,709,865	4.67
1871 ..	335,462	466,444	71.7	2,321,689	14.4	7,346,000	4.56

to age group 65-74. The growth of the final dividend in magnitude has been very marked since the beginning of the present century.



GRAPH II.
Total Deaths in Relation to Combined Deaths at Ages 15 and upwards.

Graph II. will help to explain the mutual adjustment of the divisors and dividends. It deals with the actual numbers of deaths, not with percentages, showing phthisis and cancer separately and combined and also the total deaths from all causes after the age of fifteen. The total deaths are on one-fifth the scale of the others. It will be seen that the combined and total deaths are very closely associated since 1895.

Turning now to the units for men, Table VI. shows that by closing the series at the age of seventy-five the balancing of the rates makes a fair approximation to a constant. If the series begins at the age group 5-14 and closes at seventy-five the units are much closer, but this addition can only be made to three members of the series. If the rates are calculated, as in the case of women, from fifteen to the end of life, the totals form a progressively increasing series. For our present purpose such a series may be equally as valid, if less spectacular, evidence as is the production of a constant. The sum of the rates in succession is 3,648, 3,736, 3,854 and 4,062. The reason why the balancing takes place at an earlier age in men than in women is found in the higher rates for the first two age groups in Table VII. as compared with those in the table for men. Until 1880 women had the higher rates for phthisis up to the age of thirty-five.

The near numerical identity of the rates in each census unit is all the more remarkable because it is, as it were, an unexpected result. Each unit is composed of six age groups which have nothing in common except that they are the survivors of the same original section of the population of the one age. The rates are calculated as members of the ten-year period in which they chance to fall. The divisors are thus absolutely independent of each other. The adjustment of the divisors and dividends so as to produce a constant or any other regular series is strong evidence that the conditions which determine the incidence of both diseases are very closely related. As phthisis occurs earlier in life than cancer, the dependence can only be in the one direction.

We may thus claim that the close correlation of the two diseases is inherent in the "Twenty Per Cent. Ratio" and the physical constitution of the English people. The argument wholly breaks down if the two diseases are independent of each other, but in that case it seems incredible that such an intricate series of correlations could ever have come into existence. The reduction in the deaths from phthisis in early adult life is exactly balanced by the increase in the deaths from cancer after the age of fifty-five. This of itself would be a remarkable fact if the two phenomena were not in some way related. But for the past eighty years amid all the changing aspects of the mortality rates the deaths have fallen at such times and in such numbers that we can see why the constant sum of the percentage rates is a corollary of the "Twenty Per Cent. Ratio" combined with the age distribution of the two diseases. All question of chance is therefore excluded. The correlation is a real one, and the "Twenty Per Cent. Ratio" exists only because the two diseases are related.

The significance of these rates is the greater on account of the fact that the population of England has not only been depleted by emigration, but also augmented by immigration. Both these processes modify the census units which should consist only of the survivors of those enumerated at a given census. Moreover, the immigrants are of diverse races each of which, there is a reason to believe, has its own special proclivity for both phthisis and cancer. This process is exaggerated in the case of London, the population of which has increased nearly twice as fast as that of England as a whole during the past hundred years. One-half of each census unit in London therefore is "natural" and the other half is "immigrant" either from other

parts of England or from outside countries. The London rates are not derived from census units in the sense that we have used that term, although the ratio for women is uniformly close to 21.7%, while that for men varies from 23.8% to 27.1%.

An analysis of the deaths in London by exactly the same methods as those already used, shows that after the age of twenty-five in men and thirty-five in women the rates for both diseases are much higher than those for England as a whole, while the early rates are decidedly lower. The corresponding sums of the rates for each census units is as under.

TABLE XI.—SUM OF CENSUS UNIT RATES—LONDON.

Census Year.	Census Unit.	
	Men (15 to 75 Years).	Women (15 Years to End).
1841 ..	4,486	4,292
1851 ..	4,739	4,296
1861 ..	4,820	4,275
1871 ..	4,809	4,214

On my theory the type of "immigrant" would include a large number who had already developed resistance to tuberculosis, while the higher rates for phthisis point to the greater chances of infection which always go with city life. Higher rates for both diseases, therefore, are to be expected.

PROPOSITION VI.

These English results are probably of wide application in regard to the incidence of both diseases in other countries.

The materials for Table XII. are taken from the *"Annuaire Statistique"* for 1923 and include all the countries for which the mortality rates for both diseases are carried back to 1890. The rates for phthisis are not given separately, but by adding together the cancer rate and two-fifths of that for all forms of tuberculosis a good approximation to a constant is reached. A nearer approach to a constant for each country can be effected by using a special fraction of the tuberculosis rate. The results obtained by using the same fraction makes the close relationship of the two diseases very probable throughout a population of one hundred and eighty million people in Europe. Three Australasian rates, treated in the same way, are added for purposes of comparison.

The countries are arranged according to the combined rates in 1901-1905. The war raised the rates from 1916-1920 in nearly every case.

These results are confirmed as far as the order of resistance to tuberculosis is concerned by recent work in the United States of America amongst the immigrant population living under similar conditions of environment in different States. This shows that there is least tuberculosis amongst the Jews and that it increases amongst the Italians, English, Germans and Irish in succession. Most of the available evidence goes to show that the Jews, Italians, Spaniards and the Mediterranean people have comparatively low cancer rates. The question of racial resistance to tuberculosis opens up a wider phase of the subject which cannot be discussed in detail. Suffice it to say that in such races as the Australian aborigines and the South Sea Islanders, tuberculosis in nearly every case runs a very rapid course and amongst such people cancer is exceedingly rare. In some European countries we find a high but diminishing phthisis rate associated with a rising cancer rate. In others, such as Hungary, there is a very high tuberculosis rate associated with a very low cancer rate, a condition similar to that of England seventy years ago. The facts with regard to the incidence of both diseases in the domesticated animals also fall in line with the principles set out in this paragraph. Thus the horse, sheep, dog, cat and mouse are resistant to tuberculosis and in them cancer is more common than in the cow, pig, rabbit and guinea pig which are very susceptible to tuberculosis.

The following point is worth noting. In Ireland in 1906-1910 the rates were: tuberculosis 2,526, cancer 789. In England in 1881 the rates were: tuberculosis 2,532, cancer 520. Taking 1906-1910 in order to eliminate the influence of the war and making the same comparison for each of these European countries, we find the cancer rate corresponding to a given tuberculosis rate to have been always lower in England. In Norway, Scotland, Switzerland and Austria the cancer rate is at the present time higher than it is in England. Italy is

TABLE XII.—COMBINED RATES FOR CERTAIN COUNTRIES.

Country.	1890-1895.	1896-1900.	1901-1905.	1906-1910.	1911-1915.	1916-1920.
Italy	1,209	1,232	1,219	1,315	1,260	—
England	1,561	1,562	1,564	1,565	1,619	1,753
Scotland	1,490	1,549	1,568	1,671	1,674	1,530
Germany	1,493	1,439	1,602	1,541	1,473	1,649
Holland	1,854	1,687	1,720	1,691	1,667	1,796
Ireland	1,591	1,712	1,789	1,799	1,723	1,756
Norway	1,618	1,937	1,971	1,927	1,884	1,911
Austria	2,042	2,036	2,106	2,001	1,973	2,430
Switzerland	2,207	2,223	2,344	2,246	1,995	1,991
New South Wales	899	956	1,045	1,046	1,035	1,080
Victoria	1,281	1,283	1,302	1,273	1,232	1,273
New Zealand	960	998	1,047	1,054	1,082	1,141

the only exception to this rule and it is the only one of the above countries to have a lower tuberculosis rate than England in the period covered by the table. Hence it appears that former high tuberculosis and subsequent high cancer run together.

Evidence that Cancer Attacks the Survivors.

We have now to consider the evidence pointing to the fact that the mortality from cancer for the most part falls on those who have not only been in contact with the *Bacillus tuberculosis*, but have in all probability acquired a special resistance to that organism. The cogency of this evidence increases with the number and complexity of the "coincidences" which can be shown to exist. As the relationship of the diseases when expressed by rates or by other numbers approaches towards a constant, the more intricate become the conditions which must be satisfied in order to maintain any such relationship over a series of years. The elements of chance becomes less as the period of time is increased.

The evidence to be reviewed comprises (i.) the "Twenty Per Cent. Ratio," (ii.) the percentage rates for women, (iii.) the occupations and cancer and (iv.) the compensating mortality rates.

The "Twenty Per Cent. Ratio."

The less the divergence from this ratio, the stronger is the probability that the two moieties of which it is composed, phthisis and cancer, both relate to the same individuals. It is fixed at 20% because this is the racial index of want of resistance found in the English people. The increase of cancer is due to the decrease of phthisis and cancer is recruited only to a small extent from those outside the 20%, for it is very improbable that two independent diseases should be so adjusted that the deaths have always comprised one adult in every five.

If we accept my amendment of the numbers of deaths, as bringing the error of diagnosis uniformly down to our present standard, this relationship holds for all the deaths from phthisis and cancer, nearly four million in number, since 1850. Some correction is undoubtedly necessary and if my schedule is considered to be too high or too low the "Twenty Per Cent. Ratio" will be reduced or advanced to a corresponding degree, but the ratio will still remain nearly uniform. If the earlier records are rejected and we begin the survey at 1895 the slight amount of correction necessary to secure a uniform ratio is shown in Table XIII.. The deviation from the number of deaths required to equalize the ratio in each five year period is shown in reference to the registered and corrected deaths. The war has spoilt the symmetry of this table.

TABLE XIII.—EQUALIZING THE 20% RATIO.

Census Year.	Combined Deaths.	Ratio.	Equalizing Number.	
			As Registered.	As Corrected.
1896-1900..	276,659	19.80	+ 9,222	+ 1,869
1901-1905..	293,687	19.91	+ 1,468	+ 47
1906-1910..	307,554	20.02	+ 307	— 1,314
1911-1916..	330,106	20.36	— 5,500	— 5,500
1916-1920..	350,342	20.21	— 3,503	— 3,503

What bond can there be which keeps the compensating action working with such precision, except some common factor concerned in the causation of the two diseases? The existence of this ratio simplifies the different avenues followed in this investigation. The strange relationships found in the various quotients forming the rates depend upon the adjustment of the dividends and divisors. If the sum of the combined dividends is fixed by this ratio, the deaths from cancer in the oldest age groups must absorb all that have been left over from the phthisis moiety. Thus the last quotients are fixed so far as the dividend is concerned and one half of all difficulties can be solved. But if phthisis and cancer have independent relationship to the total deaths, so that 20% is a mere matter of chance, then the reason for the numerical identities discussed in this paper is a complete mystery.

The Percentage Rates for Women.

The average sum of the rates for women in the census units is 4,071 and each of the four totals is within 0.93% of this number. The accuracy with which cancer has balanced phthisis during a period of forty years may be shown by calculating the number of deaths after sixty-five which are required to adjust the actual numbers to the exact amount. In Table XIV. the first line gives the number of deaths from the two diseases after the age of sixty-five and the second the number required to balance exactly the sum of the rates.

TABLE XIV.—EQUALIZING THE SUM OF THE RATES—WOMEN.

Census Year.	Census Unit.	
	Combined Deaths After 65.	Equalizing Number.
1841	62,747	— 1,390
1851	82,888	— 2,992
1861	111,467	+ 2,784
1871	145,000	+ 2,700

Now in this instance all the deaths to the extreme age limit are included, so that the actual and theoretical numbers are very close to each other. It is true that in the preceding table the corresponding numbers are of the opposite sign, but slight changes in the way in which the same number of deaths are distributed in the ten year periods make considerable changes in the sum of the rates. The matter of the adjustment of the divisors (all deaths from natural causes) is intricate enough without creating fresh difficulties by postulating independent dividends also. It seems

that the only simple explanation is that, as the small number of cases of cancer in the 1841 unit and the large number in that of 1871 are equally parts of the same ratio, the probability is that they stand in the same relation to the compensating deaths from phthisis. The cancer deaths in the later age groups are those that escaped phthisis in the earlier age groups of the same census unit.

The Occupations and Cancer.

The occupations were dealt with in my first paper where it was found that the incidence of phthisis in 1891 ran parallel with the incidence of cancer at all ages in 1911. In this comparison 265,977 deaths in the larger occupations were divided into five groups (Table VII. and Graph I.).

For my present purpose these results are extended by dividing the deaths after sixty-five into two age groups and by including every occupation that could be traced back to the report for 1891. The number of deaths is thus increased to 395,740. The five groups are constituted from the 1891 census by taking the sum of the phthisis percentages for the three ten year periods covering the ages from twenty-five to fifty-five. Table XV. gives the number of deaths in each group, the percentages of phthisis in 1891 and the percentages of cancer in 1911 for each age group expressed as rates per 10,000. It will be seen that by classifying all the occupations solely by the incidence of phthisis in 1891, we obtain a nearly perfect sequence of the rates for cancer twenty years later. Twenty-nine out of thirty numbers fall in the right order.

The close correlation of the two diseases may be demonstrated by modifying this table so as to makes the number of deaths in groups B, C and D as nearly equal as possible. By this adjustment the phthisis index for B extends from 9 to 14.9, that for C from 15 to 16.4, that for D from 16.5 to 21. Table XVI. shows that the new set of rates for cancer with a single exception again form a complete sequence. This is all the more remarkable as groups C and D have had the numbers of deaths greatly changed from those of the previous table.

That these results are controlled by no other recognizable common feature except the incidence of phthisis is fairly evident when the six largest occupations in each group are placed together.

A Farmers, farm workmen, gardeners, clergy, plate layers, brickmakers.
B Coal miners, shoemakers, carpenters, iron trades, innkeepers, blacksmiths.
C Labourers, carters, seamen, cotton trades, tailors, butchers.
D Engineers and boilermakers, masons and quarrymen, painters, wharf labourers, costermongers, watchmen and messengers.
E Clerks, railway porters, printers, hotel employees, drapers, brass workers.

A nearly perfect sequence of the rates appears as the result of arranging the occupations according to the incidence of phthisis at an earlier date. The occupations taken separately do not conform to the "Twenty Per Cent. Ratio." In some of them in 1891 phthisis alone accounted for more than 33% of the deaths in adult life. In such cases the incidence of cancer was very high in 1911, both in old age (when it is common) and in early manhood (when it is normally very rare). The high and low rates derived respectively from groups E and A are consistently exhibited by all the members of the groups and there are no anomalies in the intermediate groups. Thus it comes about that the risk of a young man developing cancer in group E is three times as great as in group A. Moreover a high or low cancer rate up to the age of forty-five is an indicator of corresponding rates in all the succeeding age groups. Hence phthisis in early life

TABLE XV.—PHTHISIS THE INDICATOR OF CANCER.

Group of Occupation.	Phthisis Index 1891.	Number of Deaths.	Cancer Rates per 10,000, 1911.					
			25 to 34.	35 to 44.	45 to 54.	55 to 64.	65 to 74.	75 and Over.
A.	3— 9%	61,381	11.7	44	139	347	573	610
B.	10—15%	103,299	19.2	69	230	468	650	560
C.	16—18%	133,821	19.5	75.5	251	499	669	590
D.	19—21%	63,353	22.2	75.9	277	563	751	590.2
E.	Over 21%	33,886	33.6	113	337	578	809	677

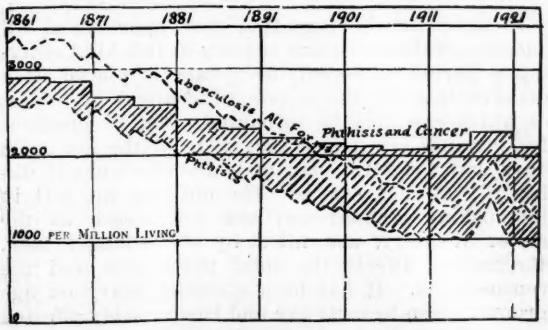
TABLE XVI.—GROUPS B, C. D WITH EQUAL NUMBERS.

Number of Deaths.	Phthisis Index, 1891.	Cancer Rates per 10,000, 1911.					
		25 to 34.	35 to 44.	45 to 54.	55 to 64.	65 to 74.	75 and Over.
B.—101,034	9 —14.9%	19.3	69	233	468	650	553
C.—102,064	15 —16.4%	19.8	77	249	492	655	561
D.— 97,375	16.5—21%	21.1	73	269	543	735	637

seems to have a selective function; it is associated with corresponding cancer rates throughout life and this selective action is most evident before the age of forty-five, when we do not expect to meet with the disease in men. Confronted by this fact our fathers would have said "the same diathesis governs both diseases." But we are now able to make a more precise statement of the conditions which govern the incidence of phthisis. Although we are still in the dark concerning cancer, it seems clear from the above evidence that the conditions determining the incidence of both diseases are interlocked. Otherwise they would have great difficulty in producing the uniform and harmonious results set out in Table XV.. We have just seen that the actual numbers of persons dying of the two diseases interlock in such a way that they can hardly be separated. The same statement may now be made concerning the conditions under which the two diseases arise.

The Compensating Mortality Rates.

Finally let us return to the mortality rates which first were noticed by Coglan in 1901 (Table II.). Here the standard of comparison is the total population at all ages. We found that the joint curve for phthisis and cancer had kept nearly parallel with the curve for the increasing population since 1891, but that the curves for each of these diseases had no perceptible relation to it (Graph I.). As the combined rates have been slowly diminishing since 1891, I expected that the removal of the deaths from phthisis in infants would at one stroke get rid of a difficult question of diagnosis and make the rates approximate still more closely. To my surprise it produced a greater variation in the case of girls and made only a very slight improvement in the case of boys. Hence it appears that the deaths from phthisis of infants under five years of age are in some way an integral part of the problem. They help to make more exact the indicator which foreshadows the incidence of both phthisis and cancer in later life. The only explanation that I can see is that phthisis at every period of life prepares the way for cancer and therefore the conclusions of the preceding sections are confirmed.



GRAPH III.
Mortality Rates for Tuberculosis, Phthisis and Cancer. The hatched portion of the combined rate is the part due to cancer.

Another strand of evidence from the compensating mortality rates is shown in Graph III. which gives the curves for phthisis and for all forms of tuberculosis since 1860. It will be seen that they are symmetrical in being nearly parallel and it can be said at once that this is mainly due to the fact that they are both related to the one cause. The third line is the combined rate for phthisis and cancer shown in five year periods. This also is symmetrical with the phthisis curve in being complementary since 1890, the combined numbers of deaths giving rise to a line parallel with the base line except during 1916-1920. As it is a fair inference to say that the one pair of lines are symmetrical because of the close relationship in causation, so the symmetry of the second pair is very suggestive of causal relationship also.

When calculated for all ages in each sex the rate for all forms of tuberculosis is not so closely related to the cancer rate as is that for phthisis. It is possible, therefore, that resistance to tuberculosis is not the whole of the story, for presumably this might be equally well conferred by any form of the disease. I am inclined to think, amongst other reasons from evidence supplied by the occupations, that a strong case can be made out in favour of a theory of reinfection by the bacillus. I propose to deal with this part of the problem in another paper.

Meanwhile I may briefly indicate the line of reconciliation of two apparently inconsistent statements in the foregoing pages: (i.) In affirming that in 1850 there was high phthisis with low cancer in England, whereas in the occupations high cancer goes with high phthisis; (ii.) in assuming that high phthisis rate in the European races will ultimately lead to high cancer rate, while in the lower animals high cancer rate is found with low tuberculosis rate and *vice versa*.

I look upon tuberculosis in Europe as having become epidemic during the nineteenth century by reason of the easy and widespread chances of infection involved in the old factory system and in the growth of the cities. Resistance to tubercle bacilli which is now a common condition, is therefore a very modern phenomenon and few races began the process so soon as the English. In 1860 phthisis had reached its maximum in women, but not in men. The reduction in the phthisis rate began in the younger age groups and did not affect men of the cancer age until about 1880. Hence in 1850 there were few people of cancer age who were resistant to tuberculosis and women exhibited high cancer rates at a much earlier date than men, so that high phthisis rates went with low cancer rates.

Amongst the various races of mankind some are little resistant to tuberculosis and in them it is not probable that cancer will become a common disease. But in most of the European races resistance is attainable and therefore the reduction in phthisis and the increase in cancer will follow somewhat the same course as in England. In many cases it

seems probable that the cancer rate will be higher than that of England.

The deaths in the occupations do not conform to the "Twenty Per Cent. Ratio" and they correspond to the various continental races in that some, such as clerks and printers, began with phthisis rates much higher than the average. Such trades already have developed very high cancer rates, so that here again high phthisis rates will be followed by high cancer rates.

The animals associated with man show very great differences in their natural resistance to tuberculosis whether of bovine or human origin. The disease is not at all a rarity, even in dogs and cats, so that it is easy to account for acquired resistance if this is a necessary prerequisite for cancer. In cattle and pigs tuberculosis is as virulent as it is in the South Sea Islanders; few of these animals become resistant and in them cancer is rare. Comparatively few farm animals except horses and dogs reach the cancer age and I may generalize by saying that in animals, as in certain races of men, a high phthisis rate is associated with a low cancer rate and *vice versa*.

An objection raised by some of my friends is that the type of individual who developes cancer, is quite unlike the type of tuberculous subjects. They are often in prime health and have never known a day's illness in their lives. This, however, is quite consistent with my position. Immunity to tuberculosis is probably established by two methods: frequent contact with small numbers of the bacilli and recovery from a diagnosable attack. In the former case the person might be all the more vigorous on account of his newly acquired resistance and if such a person died of cancer, he would not exhibit any apical scars, calcified glands or other traces of an old attack. That some process of immunization is going on seems certain from the recent history of phthisis, tuberculous peritonitis and "scrofulous" bone lesions in children.

TABLE XVII.—DECLINE IN CERTAIN TUBERCULOUS DISEASES, RATES PER MILLION LIVING (ALL AGES).

Census Years.	Tuberculous Meningitis.	General Tuberculosis.	Tuberculous Peritonitis.
1896—1900 ..	206	179	..
1901—1905 ..	185	124	..
1906—1910 ..	166	107	104
1911—1915 ..	139	83	85
1916—1920 ..	122	78	80

Similarly a correspondent from Chicago writes: "In this city forty years ago there was not a week but what we had in our clinic patients with tuberculosis joints, spines or lymph nodes. . . . Now we do not see one case of this type for every twenty that we saw in the early days."

The earlier observers did not regard scrofula as a strong predisposing cause of phthisis in later life, but rather the reverse. The late Sir Frederick Treves wrote in 1883: "Is the assertion of certain writers that the bulk of the scrofulous die of pulmonary phthisis true? The answer may certainly be given in the negative. . . . If even a moderate percentage of the scrofulous became consumptive, then would phthisis be an infinitely more prevalent disease than it is at present and at least the great mass of the phthisical would show evidence as of past scrofula."

The decrease in all forms of tuberculosis may be due in part to the education of the public and to the efforts made to reduce the chances of infection by the destruction of the bacilli, but most of it is due to more food, sunlight and fresh air and in the general improvement of the environment. The experience of most European countries during the past ten years would seem to show that it is easy for any race to lose the degree of resistance that had been slowly acquired and that retrogression may be an easy and rapid process.

As the great majority of adults have probably been more or less in contact with the bacillus, it has been suggested that there may be little significance in the correlation between phthisis and cancer. This might be so if a similar relationship existed between phthisis and other diseases, but this is not the case. In order to form an estimate of the unique character of the compensating action of our two diseases the following points may be noted.

1. There is no other pair of important diseases in which a similar movement can be detected in the rates. When working on the deaths by occupations I tried without success to find a correlation between cancer and one or more of the following: Cerebral hæmorrhage, the other chief conditions associated with high blood pressure, bronchitis, pneumonia, cirrhosis of the liver, chronic nephritis, the total deaths from each of the systems, nervous, circulatory, respiratory and digestive.

2. No correlation could be found between the deaths from acute rheumatism in 1901 and those from valvular disease in 1911 in the same occupation. In all cases deaths from valvular disease run parallel with severe muscular exertion and it is doubtful if the influence of rheumatism makes itself felt on the death rates. This is a marked contrast to the results set out in Table XVI..

It must not be forgotten that apart from all question of diagnosis any inquiry of this kind covering a period of seventy-five years is placed at a disadvantage by the action of changes the effect of which can only be estimated. The occupations for instance are not as they were in the old guild days, but the same man may describe himself differently at each census. The old men are left in languishing occupations; new ones, such as the motor industry, are filled by the younger men. Emigration affects the total population and the census units. It has been specially heavy on age groups fifteen to forty-five and has probably affected men and women in the proportion of three to two. As the effect of deducting accidental deaths was to reduce the divisors for men by about 5%, it is

probable that a larger correction is required for the net effect of migration. Hence it is perhaps surprising that the statistical material has given such coherent results.

It is by experimental work alone that the truth of my deductions can be tested. It seems clear that the increase of cancer does balance the reduction in phthisis and this one fact is the key to the whole position. Scotland furnishes equally decisive evidence. Further, if I have made good the proposition that cancer selects those who have a special resistance to tuberculosis, the following questions inevitably arise:

1. Is it possible that tuberculosis and cancer are manifestations of the same essential condition, the resistance of the body to invasion by the bacillus?

2. May not successful resistance to the bacillus in early life prepare the body to deal with a second invasion by different methods?

3. If acquired resistance to tuberculosis is the predisposing cause of cancer, may not the second invasion, usually of the epithelium, be the factor which precipitates the crisis in the life history of the cells of the body?

This analysis of nearly four million deaths caused by the two diseases shows that the correlation is so intimate that it points towards a new definition: "Cancer in the English people is in most cases the expression of the resistance of the cells to a second or subsequent invasion by the *Bacillus tuberculosis*."

Note I.—On the Increase of Cancer.

The question of the reliability of the certificates of death furnished by the general practitioner is of course of fundamental importance in this inquiry and this question is part of the larger issue: Is cancer actually increasing or is the apparent increase due to a progressive improvement in the accuracy of diagnosis during the past seventy years? In 1913 the Registrar-General published the results of a special investigation of the records for the ten year period 1900-1909. Such an interval is too short to allow of any great advance in accuracy and as very substantial increases were disclosed in cancer affecting nearly every site, the reality of the increase seemed to be proved. But the old doubts have recently been revived. It is affirmed that the changes in the figures are the result of better diagnosis combined with the larger proportion of the population which now reaches the age of fifty-five. This theory may be tested in two ways.

1. If it is true, the percentage increase of cancer after the age of fifty-five should run nearly parallel with the percentage increase of the population above the same age. Table XVIII. shows that this is not the case, for the increase in cancer is now slower than it was fifty years ago, whereas the proportion of elderly people has continued to increase since 1891 at an accelerated rate.

2. If we assume that no increase has taken place, the section of the population above the age of fifty-five should always have been uniformly affected by cancer to the extent of 6.6% as it was in 1911-1920. Adjusting the figures to this hypothesis we obtain Table XIX.. This shows that prior to 1870 the deaths from cancer ought to have been more than three times the number actually registered. If the present site incidence held good at that period it is easy to show that this supposition is untenable. For there should have been about 45,000 cases of cancer in 1851-1860 affecting easily accessible parts of the body. But as the total registered deaths was 32,949, it is made to appear that one-fourth of the accessible in addition to the whole number of inaccessible cancers were not detected.

TABLE XVIII.—POPULATION AND CANCER AFTER FIFTY-FIVE YEARS OF AGE.

Census.	Population.	Percentage Increase.	Cancer Corrected Numbers.	Percentage Increase.	Increase of Registered Cases.
1841 ..	1,537,926	—	—	—	—
1851 ..	1,838,421	19.5	39,549	—	—
1861 ..	2,102,051	14.3	56,118	42	42
1871 ..	2,415,596	14.9	81,370	45	45
1881 ..	2,722,730	12.7	112,017	37.6	47
1891 ..	3,029,605	11.2	154,400	37.8	49
1901 ..	3,461,003	14.2	206,267	33.5	39
1911 ..	4,176,901	20.7	278,447	34.7	35
1921 ..	5,203,196	24.5	368,460	32	—

TABLE XIX.—HYPOTHESIS OF UNIFORM INCIDENCE AFTER FIFTY-FIVE YEARS OF AGE.

Period.	6.6% of Population.	Cancers Registered.	Percentage Error.
1851—1860 ..	122,560	32,949	271
1861—1870 ..	140,135	46,765	200
1871—1880 ..	161,040	67,796	137
1881—1890 ..	181,515	99,517	82
1891—1900 ..	202,000	148,461	36
1901—1910 ..	230,750	206,267	11.8
1911—1920 ..	278,447	278,447	——
1921—1930 ..	343,411	——	——

Nor is this all. It is probable that the deaths from cancer for the current decade will reach at least 368,460, as is shown in Table XVIII.. This number has been obtained by multiplying the deaths for the first three years of the period by 3.6 which is the factor derived from the corresponding figures for 1911-1920. This number is 7% of the last census population and if it is realized all the numbers in the first and last columns of Table XIX. will be increased. This table would require to be calculated on a new basis for each census period.

The positive evidence pointing to an actual increase is as follows:

(*a*) In the returns relating to certain sites in which mistakes in diagnosis can hardly have been a great factor at any period, the increase since the year 1868 has been steady, although the rate of increase has varied in different sites. Table XX.

TABLE XX.—CANCER OF TONGUE AND BREAST, MORTALITY PER MILLION LIVING AGED THIRTY-FIVE YEARS AND UPWARDS.

Period.	Tongue (Men).	Breast (Women).
1868	46.6	394
1888	77.5	428
1901	116	465
1911	149	506
1919-1923	162	573

gives this information for the tongue in men and the breast in women, the rates being calculated on the population of each sex above the age of thirty-five.[1]

(*b*) At the request of the former Director of the Cancer Research Fund the deaths in public institutions have been tabulated separately since 1911, so that the accuracy of diagnosis in private practice may be compared with that under hospital conditions. No outstanding differences exist in the two sets of returns, except that cancer of the liver is more frequently referred to its primary site in hospital practice. The proportion of cancers affecting inaccessible sites is a little greater in private practice.

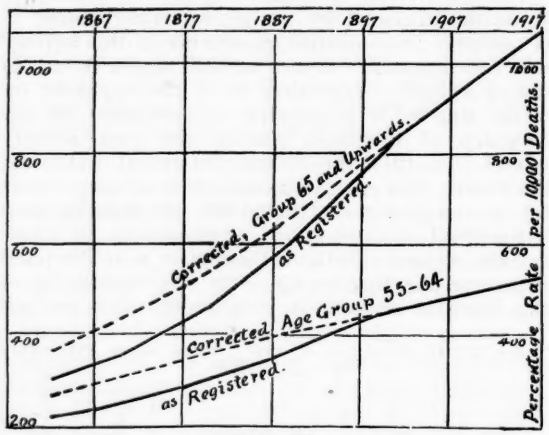
(*c*) In England since 1861 women have regularly experienced the heavier mortality from cancer and men from phthisis. But in early life the position of the sexes in regard to both diseases is reversed. Under the age of twenty females die of cancer less frequently than males and under the age of fifteen they as regularly experience the heavier mortality from phthisis. Cancer under the age of twenty is rare, these deaths constituting less than 1% of all the deaths from cancer in a given period. Yet this reversed position is disclosed with unbroken regularity since 1861 in each ten-year period. These facts seem to me to be very significant, pointing to a high average in the standard of work by the general practitioner.

Note II.—On Correcting the Recorded Deaths.

In deciding on the numbers which should be added to the recorded deaths in order to make the accuracy of diagnosis approximate to our present standard, the problem is simplified by the following considerations. The large numbers for phthisis occur in the early reports and for the age groups 25-50. Hence the error is probably not great because at those ages the disease is generally marked by its typical symptoms. But after the age of fifty-five a difference has been made by the discovery of the bacillus and 10% has been added to such deaths earlier than 1900 to compensate for cases wrongly referred to bronchitis.

In the case of cancer the large numbers are found during the last thirty years, when they require little correction. Diagnosis has improved chiefly in regard to abdominal cancer. In the early reports many deaths were ascribed to jaundice or peritonitis. The former now rarely appears on a certificate and the other is seldom given as a primary cause of death. An approximation may be made to the extent to which cancer was understated by means of the heading "intestinal obstruction." The number of deaths from this cause above the age of fifty-five has remained nearly constant since 1871. Assuming that all the cases so described were non-malignant, the number earlier than 1910 should have been less, because there were fewer deaths from all causes on account of the smaller population. On this basis we deduce an overrun which increases as the date recedes. Presumably the overrun consists of cases of cancer wrongly described. Now obstruction is due to cancers of the intestinal tract nearly all of which affect the rectum or colon, but in a few cases it is returned as a secondary cause when the disease affects the pylorus. Probably more of these pyloric cases were mentioned in the old days.

In recent reports deaths over the age of fifty-five from cancer of the rectum and colon constitute

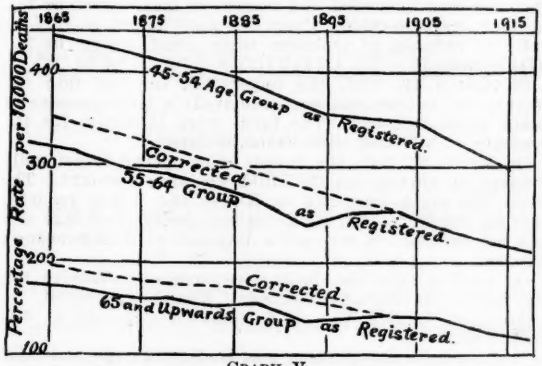


GRAPH IV.
Cancer in Women. Registered and Corrected Curves.

[1] For 1868 and 1888 see Report, 1889, page xiii., for remarks by Dr. Ogle.

TABLE XXI.—INTESTINAL OBSTRUCTION AS AN INDICATOR.

Period.	Obstruction Deaths.	Overrun.	Registered Sixth.	New Sixth.	Percentage Error.
1871—1880	11,188	2,260	11,300	13,560	20
1881—1890	11,881	2,001	16,600	18,601	12.5
1891—1900	12,096	952	24,740	25,692	4
1901—1910	12,292	382	34,374	34,756	1.1
1911—1920	12,323	——	46,408	——	—



GRAPH V.
Phthisis in Men. Registered and Corrected Curves.

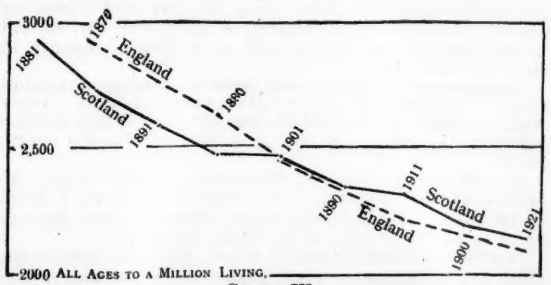
rather less than one-sixth of the total deaths from cancer at all ages. To meet the cases of the pylorus we may take one-sixth as the factor. The overrun added to one-sixth of the deaths registered in each period forms a new sixth, from which the true number of deaths may be estimated. In this way we obtain the 4%, 12.5% and 20% increase which has been used throughout this paper. The details are set out in Table XXI. and the curves for the old and corrected records are shown in Graphs IV. and V.

Note III.—On the Evidence from Scotland.

After making the same corrections as for the English reports it is found that the ratio of the combined deaths to the deaths from all causes (except accident) above the age of twenty-five is nearly the same in the two countries. In the following table this ratio and the average number of deaths from each disease are given in five-year periods since 1872. The ratio has remained nearly uniform because the increase of cancer has balanced the reduction in phthisis with the same regularity as in England.

TABLE XXII.—SCOTLAND, THE TWENTY PER CENT. RATIO.

Period.	Ratio.	Period.	Ratio.
1872 to 1876 ..	18.94	1901 to 1905 .	18.70
1878 to 1882 ..	19.10	1906 to 1910 .	19.74
1883 to 1888 ..	18.60	1911 to 1916 ..	19.46
1891 to 1900 ..	18.25	1917 to 1921 ..	19.16



GRAPH VI.
Combined Mortality Rates, England and Scotland. The Scotch rates follow the English at an interval of fifteen years; they are more irregular owing to the smaller number of deaths.

I have not had access to reports for Scotland earlier than 1872, so that there has been no opportunity of comparing the courses of the census units, but the following differences have not disturbed the correlation of the two diseases. Since 1871 the population of Scotland has increased by 40%, that of England by 66%; as the actual numbers of deaths from phthisis above the age of twenty-five remained practically stationary in both countries until 1902, the proportional decrease was considerably greater in England. Yet the combined mortality rates for phthisis and cancer (corresponding to Table I.) have run a very similar course in both countries, except that a given position was reached about fifteen years earlier in England.

These features as shown in Graph VI. constitute another extraordinary series of coincidences, if the two diseases are independent of each other.

Note IV.—On the Method Used in the Analysis of the Deaths.

The deaths in each five- or ten-year period are regarded as a self-contained unit of the population and the percentages calculated by the method of numbers exposed to risk. When dealing with the occupations I found that consistent results could not be obtained by expressing cancer or phthisis as percentages of the numbers living who had described themselves in the census papers as belonging to a given occupation. Prosperous occupations such as the motor industries are crowded with young men; languishing industries such as tin mining are left to the veterans. By the method I have used the rates for the early age groups are higher and those for the later age groups are much lower than when calculated on the mean populations. The two methods usually give about the same rates for the age group 55-65.

Note V.—On the Rates for 1841-1850.

For 1841-1850 the total deaths are given in the reports, but the full details for phthisis and cancer are incomplete, 1847 being the only year in which these deaths are distributed according to age groups. I have therefore estimated those deaths for the age groups 15-25 and 25-35 by taking 1847 as a basis and checking the results by means of a curve derived from the three subsequent ten-year periods.

Note VI.—On the Rates for All Forms of Tuberculosis.

After the age of twenty-five phthisis constitutes an average of about 95% of all deaths from tuberculosis. Hence the foregoing tables, except I., II. and XII., are valid for all forms, but the rates would be uniformly 5% higher than those shown.

Acknowledgements.

In closing this paper I must acknowledge my debt to Sir T. R. Lyle, F.R.S., for assistance in regard to the mathematics of the census units and to Mr. C. H. Wickens, Commonwealth Statistician, for giving me the benefit of his considered opinion on the method adopted for the analysis of the deaths, as well as for placing the resources of the departmental library at my disposal.

Reports of Cases.

HIRSCHSPRUNG'S DISEASE.[1]

By R. B. Wade, M.D., Ch.M. (Sydney),
Honorary Surgeon, Royal Alexandra Hospital for Children, Camperdown, Sydney.

T.U., a male patient, aged four months, was admitted to hospital on February 22, 1925. The patient was the first child of healthy parents, it had been fed on cow's milk. No normal action of the bowel had taken place since birth, it had always been necessary to use an enema. The child had vomited occasionally and according to the mother's statement the abdomen had always been distended.

Examination revealed a small baby which was well nourished, but looked slightly jaundiced. The respiratory and circulatory systems were normal. No reaction was obtained to the Wassermann test. The abdomen was considerably distended, no definite mass was palpable and the percussion note was tympanitic.

On February 24, 1925, the bowels moved after the administration of an enema, the stools being pasty and clay coloured.

On February 26, 1925, an X-ray report was obtained that no definite abnormality of alimentary tract could be detected.

On February 27, 1925, frequent motions occurred without enemata, the stools were clay coloured. The child did not vomit and was taking its food well. *Liquor pancreatis* was given with each bottle in doses of 0.18 mils. (three minims) for twenty-four hours.

On March 2, 1925, the patient was still having offensive clay coloured motions.

On March 6, 1925, the child was having no medicinal treatment and had not had a motion for three days. The abdomen was distended and masses of fæces could be felt in the transverse colon. From this until March 10, 1925, in spite of enemata of molasses fæces could always be felt in this position.

On March 11, 1925, the finger was inserted into the rectum and concretions were removed; a large passage of pasty stools followed. The fæces were examined for the presence of bile and none could be detected.

On March 27, 1925, the bowels were opened occasionally without an enema, but the child was losing weight. The child was again examined by X-rays and it was reported that an enlargement of the colon was present, but that this was not sufficient to warrant a diagnosis of Hirschsprung's disease.

On April 5, 1925, the stools were loose and offensive, but the bowels did not act frequently. The child vomited.

On April 6, 1925, the child collapsed and died at 3.30 o'clock p.m.

Post mortem examination was confined to the abdomen. On opening the peritoneal cavity a small quantity of clear fluid escaped. The stomach, duodenum and whole length of the small intestine appeared normal. The cæcum, ascending and transverse colon were greatly dilated. Just below the splenic flexure and extending down the distending colon the dilation was not so noticeable, but the colon was increased again to its previous size in the region of the pelvic colon. All the other abdominal organs appeared to be normal. The specimen is shown in the accompanying illustration.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on April 16, 1925.

Analytical Department.

"IODENTONE TOOTH PASTE (IODIZED)."

At the request of the manufacturers, Hallams, Limited, an investigation into the preparation of "Iodentone Tooth Paste (Iodized)" has been carried out by The Medical Journal of Australia. The manufacture was witnessed at the Manicrême Laboratories, Oxford Street, Sydney. "Iodentone Tooth Paste" is a soapy paste with precipitated chalk and powdered cuttlefish as abrasives. The essential ingredients used in its preparation are: Powdered soap, precipitated chalk, powdered cuttlefish, glycerine, tincture of myrrh, phenyl iodide, zinc iodide, thymol and essential oils.

The ingredients used are of high quality. The precipitated chalk and powdered cuttlefish were examined under the microscope and were found to be very finely divided and free from large particles of grit.

The process of manufacture is of the simplest nature. The soap, chalk and cuttlefish are weighed and sifted into a large mortar. The other ingredients, except the tincture of myrrh, are mixed and a syrupy solution is formed. The tincture of myrrh is then poured on to the mixed powders and the solution is added a little at a time, while the contents of the mortar are stirred and ground by hand with the pestle. The mixing is continued after all the ingredients have been transferred to the mortar until the mass is judged to be homogeneous. The resulting suspension is semi-fluid. It is placed in a jug and collapsible tubes are filled from the jug and closed by hand. The preparation, though simple, was carried out in the presence of our analyst in a cleanly manner in clean surroundings.

An examination of the tooth paste as purchased revealed that it contained the various ingredients claimed. There was, of course, no free iodine, but the paste had a distinct iodoform-like smell and taste, due no doubt to the phenyl iodide.

In the preparation of "Iodentone Tooth Paste" an endeavour has obviously been made to prepare a tooth paste which will incorporate the ideas of many modern dentists in the treatment of mouth conditions.

"Iodentone Tooth Paste" is a very good example of the class of alkaline, soapy tooth pastes and is probably better than most such pastes.

It is carefully prepared, has a good appearance and a very pleasant taste and is free from objectionable grit.

The Medical Journal of Australia

SATURDAY, JUNE 6, 1925.

The Profession and the State.

It is an unfortunate axiom of public affairs that all actions directed toward the improvement of the welfare of the community are subject to the restricting limitations of constitution. The reformer has to study the constitution of the body with which he is concerned, be it an empire, a kingdom, a republic, a colony or autonomic state, a governmental department, a municipality or a voluntary combination of citizens. While these restrictions are essential in order to prevent confusion, unwise and precipitous action and external conflict, they often appear to be embarrassing and obstructive. It is the want of recognition of constitutional laws and rules that often leads to the delay in the adoption of reform or even to its abandonment.

The medical profession is concerned with many problems affecting the public weal. In dealing with these matters consideration has to be given to laws governing the constitution of the British Empire and of its integral parts and to the rules and regulations governing the professional organizations within the Empire. In the United Kingdom very elaborate machinery has been set up by the British Medical Association for the purpose of ascertaining and defining the opinions and wishes of the members of that body. Recently this machinery has been extended to enable the Council of the British Medical Association to discover the views of the whole medical profession. The joint conference of the Representative Body and Royal Commission Committee of the British Medical Association with the Local Medical and Panel Committees held on March 12, 1925, was probably the largest and most representative meeting of its kind ever organized within the Empire. Its whole object and purpose were seriously imperilled at a preliminary special Representative Meeting by the impetuous action of a zealous member of the British Medical Association. Fortunately Dr. H. B. Brackenbury, the Chairman, has a very sound knowledge of the constitution of the Association and by his firmness saved a dangerous situation.

At the present time there are many medical and hygienic matters claiming the attention of the medical profession and of the public. Mention may be made of national health insurance, the safeguarding of the health and lives of women during and after pregnancy and of their infants, the relationship between the medical profession and the hospitals, the prevention of preventible disease, the institution and maintenance of medical research, the medical curriculum and the training of medical students, the rescue of the native races in the Pacific, the protection of the public against unskilled, negligent and fraudulent practice both within and without the medical profession and the development of industrial hygiene. It cannot be questioned that it is the function of the six Branches of the British Medical Association in Australia as the representative organizations of the medical profession to take a leading part in the initiation and development of reform in regard to each of these questions. And it is equally obvious that every member of the Association should concern himself or herself with the determination of the policy of the Association in connexion with each subject. In Australia there are serious difficulties to be overcome before it will be possible to hold representative meetings at which the views of every group of practitioners could be expressed and documented and the wishes of the majority adopted as the policy of the Association. The several Branches can create machinery and take definite action in accordance with the conditions laid down in the Memorandum and Articles of Association of the parent body. Those Branches that take advantage of the right to become incorporated under the *Companies Act* or equivalent legislation, can gain wider autonomy, but they are still required to adapt their procedure and to limit their actions to constitutional rules. The Federal Committee of the British Medical Association in Australia is also restricted in its activities by its own regulations which have received recognition by the Council of the Association and by the

several Branch Councils. In the area of each of the Branches there are certain local organizations, known as local medical associations and divisions. These bodies have no constitutional standing in the British Medical Association and consequently have no power of action in a medico-political sense. They serve a very useful purpose as voluntary local organizations without legal status in enabling members in definite areas to look after their peculiar interests and to regulate their professional relationships by common consent. It is not possible under existing conditions to compel a member of the British Medical Association residing within the area of one of these local medical associations or divisions to become a member of the local medical association or division, although the vast majority find it advantageous to join the local organization. It is possible that at some future date the Branches in Australia may cease to be the constitutional units of the Association and the Council may recognize a series of Divisions covering the whole area of each Branch. If this were done the Divisions would be governed by the same articles and by-laws as are those in the United Kingdom and would acquire many of the powers and privileges now enjoyed by the Branches. The latter would then take their place in the scheme as pure Branches instead of as Branch-Divisions. In this way the members might find it more practicable to exercise a democratic vote. On the other hand such a change would undoubtedly involve a sacrifice of utility of the Branches. Other expedients might be discovered whereby the several Branches of the British Medical Association in Australia could hold something akin to representative meetings, at which the policy of the combined Branches could be determined by majority vote. It would probably be essential to utilize the powers recently acquired for the establishment and incorporation of a Federal Council to act as the executive of the body elected to represent the local interests of each Branch. Under existing conditions each member must be versed in the constitution of the Branch and of the parent body and must endeavour to take an active part in the moulding of the fate of his profession and in the development of a more ideal service.

Current Comment.

TETANUS ANTITOXIN.

THE conception of antitoxic immunity dates back to 1888 when Richet and Hericourt treated a dog with staphylococci and induced immunity in other animals by the injection of its serum. In the following year Babes and Lepp endeavoured to prove experimentally that in artificially immunized animals the immunizing substances were present in the blood and could be transferred to other animals in the serum. In 1890 von Behring and Kitasato demonstrated that the substance responsible for the symptoms of tetanus could be collected in the fluid culture medium in which tetanus bacilli had been grown. This toxin when injected in small and increasing doses into suitable animals, induced an immunity in the treated animals. They started their immunization of horses with toxin that had been rendered almost harmless by chemical means; later when the horses became tolerant, pure tetanus toxin was employed. At about the same time von Behring and Wernicke continued this work with diphtheria toxin and established the doctrine that the toxin acting as an antigen produced an antitoxin in the body of the animal injected with increasing doses. The claims made at an early date by von Behring for tetanus antitoxin were very sanguine. He attempted to show that if guinea pigs were given two lethal doses of toxin, they could be saved provided that the antitoxin was given in doses not less than one antitoxic unit within six hours of the appearance of the symptoms of tetanus. It is unnecessary to discuss the early work in greater detail at the present time. Suffice it to state that Dönitz was unable to confirm the very favourable therapeutic action claimed by von Behring, while Beck denied that the antitoxin had any therapeutic action at all. An enormous mass of literature arose around the question of the therapeutic value of tetanus antitoxin. The difficulties of ascertaining whether this remedy actually exerts a curative effect or not lie in the following set of circumstances. Tetanus occurs as a highly acute and rapidly fatal disease and as a mild, subacute, relatively harmless infection. Its incubation period varies within very wide limits; other things being equal, tetanus that is manifested after a few days, kills practically all its victims; when the symptoms appear a long time after the infection, the course is slow and mild. In the next place tetanus toxin is produced freely and rapidly by virulent bacilli. Provided that the amount liberated is considerable, the toxin becomes firmly anchored on to the nerve ganglion cells and produces chromatolysis within two hours. There is evidence to show that when toxin is anchored on the cells, Ehrlich's theory obtains. As there are no free receptors, antitoxin cannot combine with the toxin and the latter is therefore incapable of freeing the cells of the damaging agent. From a theoretical point of view it would seem that once

symptoms have made their appearance, all that antitoxin can effect is to render fresh doses of tetanus toxin inert as they are taken up by the blood; if the damage to the cells of the central nervous system is severe, death will follow in spite of the antitoxin. In the case of diphtheria toxin, the anchoring to the cells is far less intimate and antitoxin seems to have some power to dislodge it, thus giving the cells a chance to recover. History reveals that at times a tetanus infection is of low virulence and that spontaneous recovery may take place in a group of patients.

For many years attempts have been made to attack the problem statistically. Prior to the introduction of tetanus antitoxin the mortality is said to have varied from 34% to 51%. Some authors have collected figures which indicate that a mortality of between 80% and 90% may be encountered. In the early years after the introduction of antitoxin the mortality was given at between 16% and 68%. It is obvious that these statistics are useless for the purpose of determining the therapeutic value of antitoxin on account of the fact that the groups of infections were collected under the most varied conditions. Recently Professor R. Kraus has delivered a lecture on the value of tetanus antitoxin and has endeavoured to produce a good case in its favour.[1] He, too, employs the statistical method. He admits the extraordinary variations in the mortality. In Buenos Aires between the years 1900 and 1918 the mortality fluctuated between 22% and 80% with an average of about 45%. The attempt to classify the groups of patients according to the number of units of antitoxin injected and according to the method of injection led to little success. The figures given for the death rate after cerebral injection of tetanus antitoxin are sad. Certain clinicians claim to have succeeded in reducing the mortality very considerably by means of the intravenous injection of massive doses of antitoxin. He states that Dönitz is now convinced as a result of further study that antitoxin does act therapeutically; the majority of observers maintain that it should be given in every case, even if its action appears at times to be uncertain. Professor Kraus, however, fails completely to adduce convincing evidence of a definite curative effect. He evades the issue in connexion with the experience during the war by stating that the number of cases was too small to justify conclusions and further that the number of units of antitoxin used was often not recorded. We may therefore conclude that the value of tetanus antitoxin as a therapeutic agent is not yet established; that on theoretical grounds it is unlikely to have much effect, save in the earliest stages, but that in the absence of a more powerful remedy, it should be given in large doses.

The case for the prophylactic employment of tetanus antitoxin has long been recognized. The war experience has confirmed and extended this opinion. Professor Kraus refers to the statistics collected in the Germany Army. Among over five thousand eight hundred wounded men only three tetanus infections led to symptoms and of these three soldiers, two had not received prophylactic injections. Our own statistics are even more striking, as Sir David Bruce reported in 1917. The story of tetanus antitoxin thus provides another proof for the contention that prevention is better than cure.

[1] *Seuchenbekämpfung*, Volume 1, Numbers 1 and 2, 1924.

MEASLES.

The causal organism of measles has not yet been definitely identified. Caronia has isolated a diplococcus from the blood, bone marrow, nasopharyngeal secretion and cerebro-spinal fluid of children affected by the disease in its prodromal and eruptive stages. He regards this organ as specific. Intravenous inoculation of rabbits with large doses of cultures produced a disease similar to human measles. When children were injected with attenuated cultures, a typical and mild form of the disease was produced. Rolleston in referring to Caronia's work said that further research was necessary before the latter's conclusions could be accepted. Measles has been successfully produced by inoculation of the secretion from patients into animals and reference has previously been made to this subject in this journal. Observations which may possibly shed some light on the ætiology of this disease have recently been made by Dr. James Denton.[1] Dr. Denton has examined at autopsy the bodies of eleven persons dead of measles. In eight instances death was due to broncho-pneumonia and in three death occurred before broncho-pneumonia had time to develope. Dr. Denton concluded that in the last three instances death was due to uncomplicated measles and that the lesions found were the lesions of the disease. Lesions of an inflammatory nature were found in the lower part of the trachea, the bronchi and surrounding parts of the lung tissue. The increase in cell elements was partly inflammatory and partly due to increase in size and number of cells of the lymphoid stroma. The acini of many glands contained leucocytes and countless numbers of small Gram-negative bacilli. The changes in the bronchi were similar to those in the trachea, but were accompanied by somewhat extensive destruction of epithelium. In small cavities left by degenerating epithelial cells there were found small groups of leucocytes; small masses of mucus were also present. Both the leucocytes and mucus contained numbers of this same small bacillus. Practically no other organisms were present. The areas of reaction in the lung were purely peribronchial. Dr. Denton points out that the lesions described by him are similar to though less intense than those described by Ewing and he can arrive at no other conclusion than that expressed by Ewing, that there exists in measles infection by a rapidly multiplying microorganism of the class of bacteria. He holds that further investigation should be undertaken in regard to the ætiological relationship of the Gram-negative bacillus.

[1] *The American Journal of the Medical Sciences*, April, 1925.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Orbital Cavernous Hemangioma.

G. Oram Ring (*American Journal of Ophthalmology*, December, 1924) relates the history of removal of a recurrent orbital hemangioma by electro-coagulation. The patient was a woman of about forty who previously had had her left common carotid artery ligatured. The d'Arsonal current of low voltage and high ampèrage was employed. The active electrode should be pointed and a meter used, the current ranging from two hundred to two thousand five hundred milliampères. Ether anæsthesia was used, the ether being removed from the room during operation. Both lids were dissected from the growth and divided vertically; the corners were fixed by a suture on the brow and cheek. The current was applied by means of a steel needle around the eyeball and the tissues dehydrated in a series of narrowing circles towards the nerve which was then cut, each insertion resulting in the sealing and destruction of the vessels. The needle was then inserted in several segments of the growth and the lake of blood controlled by the current. An effort was made to preserve the periosteum by keeping the needle a safe distance from the orbital lining. It was ultimately possible to shell the growth from the orbit with a dull separator, after incising it at the orbital apex and controlling the hæmorrhage by a final application of the current at this point. The author considers that this method is not sufficiently known or applied.

Epithelial Cells in Conjunctival and Corneal Infections.

H. J. Howard (*American Journal of Ophthalmology*, December, 1924) in a long article presents some new ideas concerning the part played by epithelial cells in conjunctival infections. The parasitic microorganisms are gonococci, pneumococci, Koch-Weeks's bacillus, diphtheria bacillus, influenza bacillus and in the same category are trachoma, inclusion blennorrhœa and vernal catarrh. The microorganism attacks the epithelial cell, growing upon it like a layer of turf. Ectotoxins destroy the intercellular cement substance and the bacillus extends along the under surface of the epithelial cells and attacks the deeper cell layers. Later on there is phagocytosis of the invading bacteria by the epithelial cells of the deeper layers and increasing proliferation of the deeper epithelial cells. Leucocytic phagocytosis plays no part in the fight, but is effective only with bacteria which have been loosened from their hosts and thrown into the secretion. The inclusion bodies are parasites of the living epithelial cells which ingest them and which are not killed by the cells, but continue to proliferate in the cells. The initial bodies of trachoma are stained blue by Lindner's contrast method and should be considered the active virus of these diseases. The red stained elementary bodies, wrongly interpreted by Prowazek, are degenerated initial bodies. The use of wet fixation of the scrapings is necessary to get satisfactory results.

Associated Eye Movements and Other Cranial Muscle Movements.

E. A. Carmichael and M. Critchley (*British Journal of Ophthalmology*, February, 1925) describe a series of cranial muscle movements associated with eye movement. They all occur with extreme lateral deviation of the eyes. The first is a rotation of the helix of each pinna backwards and inwards towards the mastoid, called for brevity the oculo-aural movement. The second is a depression of the contralateral eyebrow and a raising of the homolateral eyebrow, oculo-frontal movement. The third is a deviation of the point of the tongue to the homolateral side, oculo-lingual. An oculo-mandibular and an oculo-nasal movement were also found. Reference is made to the well-know jaw winking movement and the contraction of the *stapedius* with contraction of the *orbicularis*. They are probably of phylogenetic origin and are seen normally in lower carnivora depending more on hearing than on vision for protection. In patients with disseminated sclerosis a nystagmus of various facial muscles was observed arising only when the eyes were deviated laterally. Five patients exhibited a retraction—relaxation of the pinna; in others was seen nystagmus of the eyebrow and of the *levator anguli oris*.

Epithelial Dystrophy of the Cornea.

H. and J. S. Friedenwald report three cases of epithelial dystrophy of the cornea (*British Journal of Ophthalmology*, January, 1925). Miss E., aged seventy-two years, had been normal eighteen years ago. On examination the corneal surface was found to be roughened and small blebs were present under the epithelium, there being a diffuse haze over the lower half of each cornea. Studied with the corneal microscope, the stroma beneath the affected epithelium was somewhat thickened and hazy. The deeper layers contained no pigment or dense opacities. The endothelial surface was thrown into minute elevations. The second patient, a man of fifty-eight years, had a diffuse opacity occupying the lower two-thirds of the right cornea, with clear, dew-drop elevations on the endothelial surface. The left cornea manifested no epithelial lesions, but the endothelial surface presented a similar appearance to that found in the right eye. The third patient, a woman of sixty-seven, had a dust-like haze in both corneæ with the rounded elevation on the endothelial surface seen by the slit lamp. These cases are associated with a group described by Basil Graves which were characterized by changes in the endothelial layer, but no alteration in the epithelium.

Marginal Dystrophy of Cornea: Furrow Keratitis.

S. R. Gifford (*American Journal of Ophthalmology*, January, 1925) reports seven cases of marginal dystrophy of the cornea and surveys the literature. The first man was seen in 1911 when twenty-nine years old. In both eyes there was a smooth groove near the lower margin a little to the nasal side. The depressed area was two millimetres wide, smooth, not staining with fluorescein. It had sharp edges and was separated from the normal cornea by a fine line of opacity. There was slight pericorneal injection. He takes —5.5 diopter cylindrical lens with axis at ninety degrees in the right eye. The condition has not changed much at the present time. Treatment has been by glasses and zinc drops. The other cases are similar, the high degree of myopic astigmatism against the rule is usually present. Men are mostly affected (75%). They are generally over forty-five years of age. The complications are rupture of the cornea, spontaneously or from trauma, and secondary infection of the thinned area.

Turning of the Tarsus.

L. de Blaskovies (*Archives of Ophthalmology*, January, 1925) describes a new operation for entropion following trachoma and gives results of three hundred cases. A disadvantage of tarsectomy is the occurrence of a gable-shaped defect in the upper lid. The eyelid is everted and fixed by Kuhnt's modified blepharostat. An incision is made along the typical scar line one to one and half millimetres from the lid margin. The section is vertical through the thickness of conjunctiva and cartilage. A second incision is made just above the scar line and the scar and overlying conjunctiva are cut away with scissors. The conjunctiva is then dissected up into the fornix. Three mattress sutures are then placed along the free margin of the conjunctiva. The tarsus is then freed and grasped by fork-shaped forceps and the blepharostat removed. The conjunctiva is further dissected away from the levator muscle almost up to the cornea. The tarsus is pulled down with the forceps and the levator muscle is exposed. This is freed on both sides of the convex tarsal edge, leaving a pedicle of three millimetres in connexion with the tarsus. The tarsus is then revolved one hundred and eighty degrees on its pedicle so that the anterior surface looks backwards. It is here fixed to the lid margin by the sutures already inserted into the conjunctiva. The author claims that this is the best operation for entropion.

LARYNGOLOGY AND OTOLOGY.

Nasal Sinus Disease and Visual Disturbances.

A. LOGAN TURNER (*Journal of Laryngology and Otology*, July, 1924) states that benefit may follow opening up of the nasal sinuses in visual disturbances in cases in which it is known that the eye changes are dependent upon an entirely different cause, such as disseminated sclerosis, and in which the eye phenomena are merely a prodromal sign of the disease. Gavin Young thinks an infection producing little or no change in the macroscopical appearances of the sphenoidal sinus mucosa may cause a neuritis in the more delicate and less resistant structure of the optic nerve. He considers that crowding in the upper and posterior parts of the nose by a deviated septum or enlarged turbinal bone in cases of visual disturbance calls for operative interference. J. S. Fraser holds that sphenoidal sinusitis is a rare affection and occurs much less frequently than similar affections of the other sinuses. He considers that retrobulbar neuritis may be compared to nerve deafness and giddiness which are usually due to toxæmia caused by syphilis, focal infections, arterio-sclerosis, nephritis, intestinal auto-intoxication, tobacco, quinine *et cetera* and not to middle-ear suppuration and mastoiditis. In other words the causation of the mastoid and intracranial complications of middle-ear suppuration corresponds to the orbital and intracranial complications of frontal, ethmoidal and sphenoidal sinus suppuration, while the causation of retrobulbar neuritis corresponds as a rule to that of nerve deafness or of Ménière's symptom complex.

Nerve Anastomosis in Recurrent Laryngeal Paralysis.

CHAS. H. FRAZIER reports operation on three patients with bilateral paralysis of the recurrent laryngeal nerve in two of whom there is already evidence of returning function (*Annals of Surgery*, February, 1924). Under local anæsthesia he makes an incision at the anterior border of the sternomastoid muscle, looks for the inferior cornu of the thyreoid cartilage as the readiest means of locating the recurrent nerve and exposes the *descendens hypoglossi* nerve on the sheath of the carotid vessels, sufficient length being afforded for transposition to the stump of the *nervus recurrens*.

Tonsil Infection.

WALTER G. HOWARTH AND S. ROOD-HOUSE GLOYNE (*Journal of Laryngology and Otology*, August, 1924) conclude from investigations extending over two years on enucleated tonsils of children, that about half the children with enlarged and unhealthy tonsils, associated with cervical adenitis, harbour in some portion of their tonsils bacteria which are pathogenic to mice, the streptococcus being the commonest organism found. The line of march of the bacteria was traced through the stratified epithelium (generally of the crypts) into the diffuse lymphoid tissue immediately beneath and thence along the trabeculæ to the capsule where they passed into larger lymph vessels of the pharyngeal wall which drain into the deep cervical glands. Tuberculous infection occurred in only about 5% of these cases. The authors suggest that usually the enlargement of the tonsils is due to the presence of saprophytic and pyogenic bacteria. At a later stage a tonsil, already heavily charged with these organisms, may become infected with the tubercle bacillus, the whole process being a slow and insidious one. With the removal of the infected tonsils the affected glands tend to disappear.

X-Ray Injury to Larynx.

OVE STRANDBERG (*Journal of Laryngology and Otology*, August, 1924) reports the case of a man who while under treatment by X-rays for lymphoma in the front of the neck became hoarse. Eight months later he complained of pain in the throat and dyspnœa. In the middle of atrophied skin in the front of his neck was seen an ulcer the size of a half-penny. In its centre was a fistula and in that again a sequestrum of the thyreoid cartilage. The epiglottis and ventricular bands were swollen and in the interarytenoid region was a small ulcer. No evidence of tuberculosis anywhere could be adduced and no reaction was obtained to the Wassermann test. The sequestrum was removed and the ulcer healed under treatment with concentrated Finsen light. The patient recovered, but remained hoarse and with swollen mucous membrane of the larynx, the skin of the neck remained thin and the cervical tissues very solid. He quotes Jüngling to the effect that no operable cancer of the larynx should be treated by X-rays.

Laryngeal Nodes.

ANDREW WYLIE (*Journal of Laryngology and Otology*, August, 1924) regards the variability of elastic fibres in the vocal cord as a most important predisposing factor in the production of laryngeal nodes. In infancy the scantiness of the elastic elements renders the cords more vulnerable to strain or stretching and is doubtless the cause of "screamers' nodes" in infants. "Singers' nodes" are chiefly found in soprano or tenor voices, rarely in contralto or bass and generally in weakly, anæmic females who try to use the upper register without sufficient practice and overstrain the voice while handicapped by functional nasal obstruction. "Teachers' nodules" are more pronounced than those occurring in singers. Laryngeal nodes are small sharply-defined, symmetrical, sessile thickenings on the edges of the vocal cords usually situated at the junction of the anterior and middle thirds. Wingrove states the principal pathological features are: (i.) diminution or absence of elastic fibres; (ii.) permanent distension of blood vessels; (iii.) thrombosis; (iv.) extravasation of blood; (v.) fibroplastic thickening. There may be no symptoms. Early or fleshy forms may disappear entirely by disciplined whispering or by one application of the galvano-cautery point to each node, while old-established ones, containing organized thrombi and an excess of fibrous tissue, call for surgical measures. The appalling number of disappointments, however, do not afford much encouragement for radical treatment.

Radium Therapy in Œsophageal Cancer.

WILLIAM HILL (*Journal of Laryngology and Otology*, February, 1925) is of opinion that malignant strictures in the thoracic part of the gullet are for practical purposes outside the limits of radical surgery. Palliative measures, then, must be relied on for the relief of dysphagia. These include dilatation of the œsophageal lumen with bougies; the employment of some form of intubation; per-endoscopic removal of portions of protruding, soft, fungating growth; superficial tissue destruction by galvano-cautery or surgical diathermy or attempted diminution of the growth by endo-œsophageal surface applications of radium salts or emanations. He claims that radium therapy, in spite of its uncertainty (for some malignant formations are much more affected by radiation than others) and the slight element of danger attending its use, has stood the test of time and has been of proved value in a proportion of well selected cases. Failure or inability to carry out a proper preliminary diagnostic investigation of the nature, site and exact dimensions of the lesion and want of knowledge of the exact details of the technique of carrying out the treatment with both skill and judgement, may result in failure to procure the functional relief sought.

Labyrinth Fistula Symptoms.

S. H. MYGIND holds that the labyrinth fistula symptom is simply an otolith reaction produced by an adequate irritation in the form of an increase or decrease of endolabyrinthine pressure (*Journal of Laryngology and Otology*, September, 1924). The direction and form of the eye movements have nothing to do with the seat of the fistula. The movements may vary according to the physiological state of the neuro-epithelium of the maculæ. An œdema of the labyrinth, existing or past, may injure the function of the maculæ and a reversed fistula symptom may result. The pseudo-fistula symptom and the fistula symptom in cases of syphilis require no further explanation.

British Medical Association News.

MEDICO-POLITICAL.

A DEPUTATION from the Council of the Victorian Branch of the British Medical Association recently waited on Mr. D. C. Berriman, Coroner for the City of Melbourne, for the purpose of laying before him the suggestion that means should be adopted to minimize the loss of time of medical practitioners called to give evidence in the Coroner's Court.

After hearing the argument Mr. Berriman expressed a desire to assist medical practitioners. He stated that if a medical witness called for ten o'clock in the morning would telephone to the Coroner's orderly, he would be informed of the approximate hour when his evidence would be taken. The attendance of members of the honorary staff of public hospitals was not necessarily required; a medical officer having knowledge of the circumstances of the case could attend. In the event of death under anæsthesia, the anæsthetist and the surgeon would be required to give evidence.

The Council has addressed a letter of thanks to Mr. Berriman for the manner in which he has met their wishes. The following letter has been received by the Council:

Dear Sir:

For your letter of the 27th inst. I thank you.

It will be, as it has been, my aim to assist medical officers who may have to attend before me as witnesses in every reasonable way. I desire that their own important work may at all times be considered and remembered, consonant with the need for their evidence at inquests.

Yours faithfully,

(Sgd.) D. C. BERRIMAN.

City Coroner's Office, Coroner.
Melbourne,
29th April, 1925.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Davidson, Christopher Harold Montgomerie, M.B., Ch.M., 1924 (Univ. Sydney), Seaview and Victoria Streets, Ashfield.

Dowe, Philip Charles, M.B., Ch.M., 1924 (Univ. Sydney), Beralla.

Egan, Edward Charles, M.B., Ch.M., 1924 (Univ. Sydney), 25, Denison Street, Waverley.

Hill, Harry Roland, M.B., Ch.M., 1924 (Univ. Sydney), Cliff Street, Manly.

Kirkland, Keith Lindsay Hugh, M.B., Ch.M., 1925 (Univ. Sydney), 106, Belmont Road, Mosman.

McArthur, Alexander Christie, M.B., Ch.M., 1892 (Univ. Glasgow), 104, Fitzroy Street, Grafton.

Meredith, John Baldwin Waters, M.B., Ch.M., 1923 (Univ. Sydney), Weston.

Pearce, Thomas Russell, M.B., 1925 (Univ. Sydney), Beresford Avenue, Chatswood.

Squire, Doris Wills, M.B., Ch.M., 1925 (Univ. Sydney), 19, Archer Street, Chatswood.

Tunley, Leslie William, M.B., 1924 (Univ. Sydney), Gulgong.

Tunley, Marjorie Ethel, M.B., 1924 (Univ. Sydney), Gulgong.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Adamson, Reginald Victor, M.B., B.S., 1925 (Univ. Melbourne), Toorak.

Barnaby, John Gowan, M.B., B.S., 1925 (Univ. Melbourne), 35 Chrystobel Crescent, Hawthorn.

Burgess, John Norval, M.B., B.S., 1925 (Univ. Melbourne), Kew.

Burns, William James, M.B., B.S., 1925 (Univ. Melbourne), 109, Cecil Street, South Melbourne.

Cowling, Inglis Hall, M.B., B.S., 1925 (Univ. Melbourne), East Malvern.

Dickson, Cyril Hopetoun, M.B., B.S., 1925 (Univ. Melbourne), East Malvern.

Fredman, Stanley Levin, M.B., B.S., 1925 (Univ. Melbourne), 61, Wellington Street, Windsor.

Griffiths, Norman James, M.B., B.S., 1925 (Univ. Melbourne), 86, Normanby Road, East Kew.

Mackenzie, John Keith Douglas, M.B., B.S., 1925 (Univ. Melbourne), Toorak.

Morris, Mathew James, M.B., B.S., 1925 (Univ. Melbourne), Medical Society Hall, East Melbourne.

Rait, Cecil William John, M.B., B.S., 1925 (Univ. Melbourne), Medical Society Hall, East Melbourne.

Rosenthal, David Braham, M.B., B.S., 1925 (Univ. Melbourne), 8, Victoria Street, Ballarat East.

Spalding, James Atcheson, M.B., B.S., 1925 (Univ. Melbourne), Epping, Victoria.

Wait, Leslie Proud, M.B., B.S., 1925 (Univ. Melbourne), 399, Glenferrie Road, Glenferrie.

Williams, Frank Winfield, M.B., B.S., 1925 (Univ. Melbourne), South Yarra.

Medical Politics.

NATIONAL HEALTH INSURANCE.

(*Continued from Page* 579.)

Preventive Health Services.

(*a*) *Public Health Organizations.*—The control of public health in the several States is usually vested in local government authorities who operate under the supervision of a central health authority in the administration of the *Public Health Act*. Public health legislation in Australia embodies supervision over the following: Protection of water supplies from pollution, sewers and drains and disposal of sewage, removal and disposal of night-soil, scavenging, removal of refuse, cleaning of streets *et cetera*, dwellings, boarding-houses and lodging-houses, public buildings, nuisances and offensive trades, foods and disinfectants, infectious diseases, venereal diseases, vaccination, private and public hospitals, morgues, cemeteries and crematories, registration of midwives and general and mental nurses, the maintenance of laboratories, the medical and dental inspection of school children, the medical care of aboriginals, the supervision of industrial hygiene regulations. This is a composite list representing the whole range of activities, but in no one State does the *Health Act* include all these functions. The Commonwealth Health Department's functions relate to quarantine, laboratories, prevention of disease, industrial diseases, the Institute of Tropical Medicine and to infectious diseases.

In public health legislation there is an increasing tendency to control sanitation by means of by-laws and regulations which owing to their flexibility are specially adapted for the purpose. With the increase in population throughout Australia there has been a corresponding increase in the responsibility of local government authorities and the administration of public health matters throughout Australia has been decentralized to such an extent that it is overburdened with administrative bases, few of which are in receipt of revenues which will enable them to carry out the duties evolved upon them. Inadequacy of effort and lack of funds have resulted in the aim of effective control and prevention of infectious diseases not being fully achieved. The local part-time medical officer of health is not made fully responsible for health matters, whereas his functions in the community should be preventive. Until a full-time medical health officer is retained as an active unit of public health administration responsible to the central authority no con-

siderable progress can be expected. The local health inspectors generally have insufficient status to enable them to properly perform their duties. Local authorities should be grouped into districts in each of which a full-time medical officer of health would act as authorized deputy of the central health authority.

The health of the people is of paramount importance and should be dealt with by the Government on more scientific lines than at present. A healthy community is the greatest asset, as every incapacitated breadwinner is a loss to the State and the sooner he is made fit, the sooner he will be of some economic value to the community. Notwithstanding the fact that Australia's general mortality rate compares very favourably with that of other countries, yet in the question of preventive medicine we are far behind. The science of preventive medicine is concerning itself more and more with the health of the individual and the medical supervision of large numbers of individuals has become recognized as an integral part of the campaign to prevent the inception or the progress of disease. At the present time there are extensive legal provisions relating to the environment, whilst there is practically no legal provision with respect to the health of the individual which is of the most vital importance in any system of insurance. Friendly societies have never dealt with their members from the preventive aspect. Public health activities should be extended in very many ways.

Experience shows it is now essential for the success of preventive medicine that all practising physicians should become actively engaged in the official health campaign. The general practitioner should be coopted in the scheme to work with the public health authorities, as by such means a great advance should be made in the direction of making preventive medicine an essential part in the practice of medicine generally without affecting the independence of the practitioner.

Adequate provision should be made for wards or hospitals for infectious diseases and a more complete association between health authorities and hospital authorities is very essential. It has been suggested that all health matters should be supervised by the Commonwealth and that a national health scheme should be formulated whereby there would be a combined Commonwealth and State health service under which general questions would be dealt with by the Commonwealth, whilst questions of local application would be dealt with in the States under a system of district administration. It is essential that practical cooperation and efficient standards of administration throughout Australia should be realized, as it is only by such means that an adequate national health service can be attained.

(*b*) *Maternal Hygiene.*—The principal causes of deaths of mothers in child-birth are five in number, *videlicet*, accidents of pregnancy, puerperal hæmorrhage, other accidents of labour, puerperal septicæmia, puerperal albuminuria and convulsions. It would appear that in hospitals or where skilled attention is available these last four causes of death can be largely eliminated. Prenatal influences together with injuries at birth accounted for 48% of all deaths under one year of age in Australia during the year 1923. Skilled assistance should be available to all mothers before, during and after labour, as in all cases it demands the attendance of an adequately trained doctor and an adequately trained nurse. The legislation with respect to the registration of midwifery nurses and to the control of private maternity hospitals could be improved. In some States maternal welfare is not associated in any way with the Health Department, which should be the official agency charged with the supervision and direction of maternal hygiene.

(*c*) *Child Welfare.*—Baby clinics and child welfare centres are maintained by private organizations, usually assisted by municipal or Government subsidies in the metropolitan areas and also in some country centres for the purpose of giving prenatal and postnatal advice to mothers. Some of the organizations endeavour to coordinate and extend the various activities dealing with the welfare of mothers and babies, others care for the young children of poor working women during the hours when the mothers are at work. Homes for foundlings and for infants where parents are unable to provide proper care have also been instituted and temporary homes for unmarried mothers with their first child. Full-time nurses are maintained in some cases by State departments to visit expectant mothers and the homes of people in distressed circumstances for the purpose of rendering assistance and giving advice in connexion with the care of infants and the principles of personal and general hygiene.

At the present time a system of medical examination of school children has been put into operation in the various States, but owing to the inadequacy in numbers of the staff engaged on the work—the number of scholars in the State schools in Australia totals over 830,000—and the tremendous area to be covered, it has not been found possible to adequately carry out the work which requires to be done. Dental clinics have been established in some metropolitan areas for free dental treatment of children of parents who are unable to pay for treatment, but these clinics only deal with urgent cases and whilst doing good work are unable to cope with the full demands. A system of motor vans properly equipped as travelling surgeries for country districts would be a very important feature of dental treatment. The need for medical care of school children in Australia, especially in regard to their teeth is apparent when it is appreciated that 50% of adult sickness is stated to be due to the neglect of the teeth in childhood and early adult life. The schools are a very important feature of any preventive health work and periodical examinations of school children are considered to be most important from the national health standpoint. A child should be medically examined when entering school life, again when about half way through school life and again just before leaving school and going into industry. Health lectures should form part of the school curriculum and an educational publicity campaign should also be undertaken in an endeavour to impress the importance of this question upon the people.

(*d*) *Industrial Hygiene.*—As industrial workers will constitute a large majority of the insured members of any national insurance scheme instituted in Australia, it is essential that the question of industrial hygiene be given the utmost consideration. Medical examinations of recruits during the war revealed an extraordinary amount of disease and defects. The national loss of wages and production as the result of sickness amongst wage-earners is enormous; such illnesses, largely preventible, cause an absence each day of about 3% of the wage-earners in Australia. The Commonwealth Statistician has estimated that the accumulated cost of maintenance and education *et cetera* of a boy to age fifteen is £430 and that the capitalized present value of his future earnings at age sixteen is £2,025. It is apparent, therefore, that if the question of the wage-earner's health and value to the community is considered merely from the financial standpoint, every effort should be made to safeguard him from the time he first enters into industry. More effective governmental control over health conditions in industry is necessary. Although it is practically impossible to provide regulations which will cover every possible cause of accident or danger to health, it is essential that the more dangerous trades be effectively controlled. Such regulations should not only prescribe measures for eliminating or minimizing the risks concerned, but in the more dangerous occupations should require periodical medical examination of employees to be made by an authorized medical practitioner. An attempt should be made to define the majority of diseases which should be covered by such regulations and it has been recommended that regulations modelled on those operating in England should be brought into force for the industries concerned in Australia. Unless any particular climatic conditions in any locality necessitate a modification it is desirable that industrial legislation in Australia should be uniform.

Some employers of labour have established rest-rooms and provided skilled medical atendants for their staffs, surgeries being equipped in the factory and the warehouse; rest homes in some cases are maintained in the country and physical culture, recreation and athletic facilities are also in many instances provided. An in-

creasing number of employers of labour is making arrangements with medical practitioners in order to reduce the amount of sickness amongst their employees. In Queensland the State Insurance Department provides substantial discounts to employers who maintain an approved ambulance service on their premises as a means towards minimizing the results of accidents. Some American insurance companies examine their policy-holders free every two years in an endeavour to prevent disease and lessen the risks covered. Friendly societies generally have no welfare schemes in operation for the benefit of their members, apart from the sickness and hospital benefits and this is a most serious omission from their functions. A few industrial assurance companies in Australia have established welfare schemes and nursing services in the interests of their policy-holders, with an aim to the prolongation of life of the policy-holder and the consequent reduction in claims and although such schemes have only been in operation for a few years, it has already been claimed that the beneficial results have more than justified the expenditure. Employers should be encouraged to start similar systems of medical supervision for their employees and some arrangement whereby they would receive a rebate on contributions to the insurance fund if they adopted approved methods of medical examination of employees is worthy of consideration, as it is of the greatest importance not only to the insurance scheme, but in the interest of national health that skilled medical advice for the worker should be constantly available.

National health insurance schemes in other countries have not yet in any instance provided for periodical medical examinations of insured members, although it has been suggested that such would be an excellent provision if it could be carried into effect. It has been stated that the only system which would provide for adequate medical supervision of insured persons would be that making the medical examination compulsory each year. This periodical medical examination of insured persons, which must be very exact and scientific, would thus be of great value from the standpoint of national health, as numerous instances of disease would thus be discovered in the early stages when a speedy cure could be effected and in many cases a loss of working time prevented. The periodical compulsory medical examination of disabled returned soldiers is a striking instance of the beneficial effect of a system of periodical examinations. At Broken Hill compulsory routine examination of miners is enforced for the specific purpose of protecting their own health. It should be possible to classify the various occupations according to the physical standard required of the workman to adequately perform the work and applicants for employment should undergo a medical examination which would indicate their physical fitness for the position for which they are applicants. Under such system, however, adequate arrangements would be necessary to provide for that small percentage of substandard men who would be unable to secure normal employment.

(e) *Medical Research Work.*—Extensive medical research work is being carried out in other countries and as the conditions in Australia differ appreciably from those which exist elsewhere, it is very desirable that they should be investigated. At the present time there are many diseases about which little is known for the purpose of prevention and it is important that full investigation with respect to these should be undertaken. A certain amount of research work has already been carried out in Australia by private practitioners and in the laboratories of the health departments and at public hospitals, but this work should be very considerably extended, as health research should be closely associated with health administration. It is suggested that a central establishment for the investigation of preventible diseases, working in association with existing institutions, with branch establshments throughout the Commonwealth, should be instituted. Investigations should be undertaken with the object of elucidating the principal factors concerned in the spread of infectious diseases and as to the means of arresting their spread. Although the diphtheria mortality rate has been reduced, yet there has been a very serious increase in the number of cases of diphtheria; the cancer death rate has shown a steady and serious increase for a considerable number of years; no reduction in the mortality of women during child-birth has taken place and there has been no reduction in the mortality rate from congenital causes during the first month of life. A considerable portion of the invalidity for which Commonwealth invalid pensions are now paid, is stated to result from diseases which are preventible. The above are instances of the important investigations which should be undertaken under Government supervision in the interest of national health.

Summary of Recommendations.

Your commissioners recommend:

1. That a national insurance fund be instituted which will provide for the payment of sickness, invalidity, maternity and superannuation benefits to insured members and
   - (i.) That membership of such fund be compulsory;
   - (ii.) That a sickness benefit of 30s. per week be payable to adult insured members during the first six months when incapacitated for work as the result of sickness;
   - (iii.) That a sickness benefit not exceeding 20s. per week be payable to insured members under twenty-one years of age during similar incapacity;
   - (iv.) That equivalent benefits be payable to insured members when incapacitated for work as the result of accident that the question of including workers' compensation legislation under the national insurance fund administration be fully considered;
   - (v.) That an invalidity benefit of 20s. per week be payable to insured members during that period when incapacitated for work as the result of sickness or accident extending beyond six months' duration;
   - (vi.) That a maternity benefit of 20s. per week be payable for a period of two weeks prior to and for four weeks after the confinement of a female insured member or the wife of an insured member;
   - (vii.) That as the cost of the existing maternity allowance is at present borne solely by the Commonwealth, this responsibility should continue with respect to the maternity benefit provided under the national insurance fund;
   - (viii.) That a superannuation benefit of 20s. per week be payable to male insured members after attainment of age sixty-five and to female insured members after attainment of age sixty;
   - (ix.) That the existing rights of pensioners under the *Commonwealth Invalid and Old-Age Pensions Act*, 1908-1923, should not be interfered with;
   - (x.) That a child allowance of 5s. per week in respect of each dependent child under age sixteen be payable to the insured member when incapacitated for work;

2. That a national health scheme be instituted which will provide adequate medical treatment for the people and which will provide the requisite machinery for the prevention of sickness and accident and
   - (i.) That such scheme be dissociated from the administration of the national insurance fund;
   - (ii.) That the functions and objects of the Health Department be extended in such manner as will enable provision to be made as early as possible for the effective supervision of adequate medical services, especially with respect to maternity treatment.

As previously indicated the inquiry in connexion with unemployment and destitute allowances is now proceeding and as the questions of membership, finance and administration of any proposed national insurance scheme must be considered in relation to all sections of the inquiry, these questions will form the subject of a further report when the inquiry with respect to unemployment and destitute allowances has been completed.

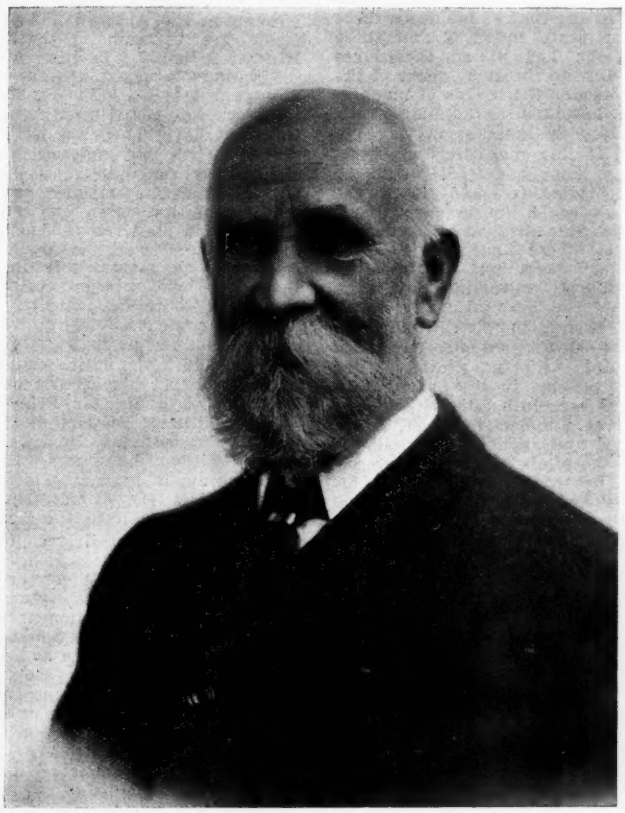
In order that a comparison may be made of the main features of the schemes in operation in various countries,

your commissioners have compiled a conspectus of the legislation which has been enacted in the several countries with respect to the provision of (*a*) sickness, maternity and funeral benefits and (*b*) old-age, invalidity and survivors' benefits.

Obituary.

ERIC SINCLAIR.

In a little office in Richmond Terrace bordering on the Domain of Sydney there is today an empty chair. In the hearts of many men and women there is today an ache. He who filled that chair, who inspired confidence, goodwill and affection, was called to his long sleep on May 15, 1925. For nearly forty-three years the beneficent influence of Eric Sinclair's personality and determination has forced itself on the people of New South Wales and even beyond its confines. His successor in office will find it difficult to maintain the high standard he attained. His life was one long struggle to attain ideals. From this brief account of his history the reader will gather how much he achieved and how many further reforms of his initiation were within measurable distance of accomplishment.



Eric Sinclair was the fourth son of a respected Presbyterian minister of Greenock. He was born on February 14, 1860. His childhood was spent in his birthplace. From the provincial school where lessons were learnt in dire earnestness and where the lighter tendencies of youth were subjected to dour routine, he passed on to the Glasgow University to study medicine. The Scottish schools of medicine at that time were producing pioneer doctors whose mission was to set example and precept in all the corners of the British Empire. At an early age Eric Sinclair manifested an industry and ability which placed him in the front rank of his compeers. His career at Glasgow was a brilliant one. He was regarded as one of the most thorough and accomplished undergraduates of his time. He passed his examinations with distinction and had to await the advent of his twenty-first year before he was eligible to receive the degrees of bachelor of medicine and bachelor of surgery. Immediately after graduation or rather after having passed his examinations, he became resident medical officer at the Western Infirmary, Glasgow, under the late James Finlayson. Later he served as resident house surgeon to Alexander Patterson.

In the early summer of 1881 he sailed for Australia and landed in Sydney. He became registered in New South Wales in September, 1881. Soon after his arrival an outbreak of variola created a small panic among the citizens and the services of additional medical practitioners were sought at the Quarantine Station at North Head. Sinclair obtained one of these positions. On January 9, 1882, he obtained an appointment in the Lunacy Department of the Colony and was sent to the asylum at Gladesville, where the late Thomas Morgan Joseph was Medical Superintendent. At that time the number of persons certified as insane in the Colony was 2,387. The service was under the control of the late Frederick Norton Manning, an eminent organizer and psychiatrist. For two years Eric Sinclair was resident medical officer, during which time he displayed unusual resource, keen judgement and technical ability.

In 1884 he succeeded Joseph as Medical Superintendent and from that moment he embarked on a career of reform that stamps him as one of Australia's most gifted citizens. Under the old *régime* the nurses and warders in the asylums were untrained persons; some were naturally endowed with kindliness and determination to help the mentally deficient; some were devoid of intelligence and sympathy and merely accentuated the horror of the pseudo-prisons in which the insane were incarcerated. Sinclair determined to put an end to this state of affairs. He realized that disease of the mind, like disease of the rest of the body, is a misfortune, varying in severity with the extent and nature of the lesion. The era of the lunatic asylum was doomed; persons affected with mental disease deserved skilled treatment in hospitals, not imprisonment for the sole protection of those whose liberty was unrestricted. The first step in the reform was the systematic training of nurses and male attendants. He instituted lectures, ward teaching and individual tuition at Gladesville. This bore fruit at once. The whole atmosphere of the institution was changed. Under his influence the medical officers, the nurses and male attendants became inspired to a new task. Active treatment replaced mere care and restraint. Structural improvements were effected gradually so that even the environment began to assume a new aspect. The asylum was gradually changed into a hospital. This work could not be accomplished in one day; it demanded years, because many had to be convinced of the wisdom and feasibility of the reform. But to Eric Sinclair it was only the beginning and his immense patience and determination, added to his love for his fellow creatures and sympathy with the diseased, clothed him with power to erect his castle brick by brick in the ripeness of time. He visited Scotland for a brief period in 1886 when he obtained the degree of doctor of medicine.

In February, 1898, Norton Manning retired and Eric Sinclair was appointed Inspector-General of the Insane. Never was there a happier or a wiser choice. A strong man had been in charge and yet the dictates of humanity cried aloud for sweeping changes. Sinclair, with all his

gentleness and modesty, was needed to transform the service. The second step and the third followed rapidly. Trained nursing replaced the untrained care throughout the asylums of New South Wales. Other Colonies took up the cry and this reform soon spread over the whole of Australia. Next the strait-jacket, the chains, the padded cell, the locked door became doomed. Restraint was used with ever diminishing frequency until at last it was applied only on rare occasions and almost imperceptibly. The asylums became hospitals for the insane and then mental hospitals. His own title was changed to Inspector-General of Mental Hospitals. The alteration of terminology was important to Sinclair, for he was fighting to eliminate the stigma which formerly attached to the insane, an unjust blame for a misfortune. When he succeeded Norton Manning there were just under four thousand persons under control. In the twenty-seven years that followed, he opened six hospitals, completed one that had been commenced in 1896 and nearly completed an eighth at Orange. At the time of his death there were 8,292 persons under certificate and a further three hundred and twenty-three who had placed themselves voluntarily under his care. During the early years of the century he endeavoured to persuade the boards of management of the great general hospitals to admit persons suffering from mental diseases in their early stage to their wards. The opposition to this suggestion was stubborn and emphatic. It was thought that it would be impracticable; the presence of lunatics would disturb the other patients; female nurses could not manage them; treatment was of no avail. Eric Sinclair remained unmoved by these vain criticisms. If others had no vision, he would have to prepare a demonstration. In 1908 he opened a hospital at Darlinghurst for voluntary patients. The nurses were all female. The hospital was a small one, but the demonstration was a complete vindication of his demands. With open doors, without any legal right of detention or restraint, with the gentle, skilled care of well trained women persons in the early stages of mental disease were guided back to health without any of the anticipated disadvantages. The doctrines of Kräpelin had been rightly interpretated and applied. But still the authorities in the general hospitals were unconvinced. Eric Sinclair realized that he would have to take his demonstration a step further and build a large hospital for voluntary patients with an out-patient department attached where treatment could be given to those whose illness was not severe enough to necessitate admission or institutional discipline. In 1922 he closed the Darlinghurst ward and opened Broughton Hall, a model hospital for patients who apply for treatment of their mental ailments without certification. It is impossible in this place to describe in detail the nature and working of this institution. It must be left to the imagination of the reader to recognize the immense achievement of Eric Sinclair in devising the machinery whereby the chances of recovery of these patients has been increased a hundred fold.

The hospital at Morisset was opened in 1909, that at Stockton in 1910, that at Rabbit Island in 1910 and that at Milson Island in 1920. Mention should be made of the establishment at each of the great mental hospitals of admission wards or blocks. This had been effected by 1910. All patients on admission were sent to these admission wards or blocks and were kept there under treatment as long as the prognosis appeared to be good. Many were thus spared entry into the general wards of the main hospitals. This avoidance of contact with persons suffering from the chronic forms of insanity cannot be overestimated. There is an inevitable sense of hopelessness associated with the majority of the chronic maladies and every physician knows full well the therapeutic value of hope.

Another important reform must be attributed almost entirely to Sinclair. The law imposes many burdens on the insane. The procedure for admission is prescribed by law without consideration for the patient and without sympathy with the relatives of the patient. But even the law is not inflexible. Sinclair discovered methods within the four corners of the *Lunacy Act* by means of which the procedure of admission through the Reception Houses at Darlinghurst and at Newcastle became humane to both patient and his relatives without any sacrifice of safety to the world at large and without encroaching on the liberty of the subject beyond the limits fixed by statute. He extended the system of voluntary admission. The open door and the right of the patient to walk out through it at will were not disturbing factors in Sinclair's programme. He transformed them into therapeutic measures and his patients realizing this, usually did not hesitate in availing themselves of the privileges offered.

He instituted a *Kindergarten* school at Newcastle for mentally deficient and imbecile children, after he had brought order out of chaos in the mental hospital by the removal of the adult patients and the manual training of the little ones whose measure of happiness is enhanced by the smallest task performed.

On September 5, 1915, Eric Sinclair received a commission in the Australian Army Medical Corps and was made officer commanding the Number Thirteen Australian Military Hospital. In this capacity he had control over the soldiers returned with nervous and mental affections after war service. Eric Sinclair determined to dispense as far as was possible with the expedient of certification. He held that this would be a gain to the men and to their relatives and indirectly it would contribute to their ultimate recovery. He opposed the passage of a special act of parliament for returned men with mental disease, for he claimed that there was but small difference between military and civil recognition of insanity. He fought for his ideals and won the fight. Even today the only ex-soldiers with mental affections under certification are those who have revolted against hospital discipline while they were voluntary patients. Many have recovered and many are content to undergo treatment without compulsion and without restraint.

In May, 1918, the military authorities sought the services of a master organizer and strong disciplinarian. They appointed Eric Sinclair Principal Medical Officer of the Second Military District on account of his exceptional qualities in both directions and of his power to exercise control without harshness. He achieved success in this undertaking as he had achieved it in other spheres of activity. His term of office came to an end in 1920, when he was transferred to the Reserve.

In the year 1900 Eric Sinclair established the pathological branch of his department. The late Anderson Stuart, Dean of the Faculty of Medicine of the University of Sydney, placed laboratory accommodation at his disposal and the necessary equipment was provided. The late J. Froude Flashman was the first Director. Prior to the war Dr. Oliver Latham joined as assistant pathologist. On the death of Flashman in England, Dr. Latham became Director. He still holds the position. The laboratory has been modelled on the lines of the laboratories at Claybury in England, under Sir Frederick Mott, and in Edinburgh under the United Scottish Asylums. Some very valuable work has been completed in the laboratory, much of which has been published in our pages.

There is still much to be told, but the available space is insufficient. A great deal could be written concerning the repeated endeavours on his part to persuade the Government to establish a chair of Psychiatry at the University of Sydney. Here again Eric Sinclair attained his objective by persistent advocacy and weight of sound argument. By the appointment of Sir John Macpherson as the first Professor the teaching of psychiatry in Sydney has been placed on the securest footing. Had Sinclair lived longer he would undoubtedly have gained further victories over indifference and reactionary legislators. He has clamoured for years for the passage of a measure for the control of mental defectives on scientific lines. A bill has been drafted under his direction and has been in the hands of successive governments; it has been shelved time after time, possibly because of the expenditure of money involved in its administration. The provision of more accommodation for the patients under his care has caused him many trials and the exercise of patient repetition of reasonable demands.

He occupied many positions outside his department. He was a trustee of the Australian Museum, a member of the Council of St. Andrew's College, a member of the Committee of Sydney Industrial Blind Institution, a member of the council of the Presbyterian Girls' Hostel, a director of the Nurses' Club, a member of the council of Dental Hospital, a very active member of the Microscopical Society. He wrote little, but his annual reports were patterns of clarity and good diction. He was chosen President of the Section of Neurology and Psychiatry at the Australasian Medical Congress, Melbourne, 1908, and his address on that occasion was a most admirable one.

It is no exaggeration to state that he was worshipped by every one of his subordinates and that he exercised on them an influence of a very unusual character. All who knew him, came under the spell of his handsome appearance, the charm of his personality, his gentle manner, his engaging conversation and his unfailing forebearance.

His wife died over thirty years ago. He is survived by two doctor sons, both in practice in New South Wales, to whom the sympathy of the medical profession has been extended. They may count themselves fortunate in having had such a father.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A meeting of the Senate of the University was held on Monday, May 11, 1925.

The following degrees were conferred *in absentia*:

M.B.—H. D. Ashton, C. B. Boddington, B. A. Cook, J. L. Dart, A. H. Hart, A. A. Heath, M. J. Hishon, K. L. H. Kirkland, M. G. Kite, W. N. Little, S. V. Marshall, A. D. A. Mayes, H. S. Roberts, B. A. Sinclair, R. W. Thompson, K. B. Voss.

A memoir of appreciation of the late Professor John Hunter was received from Dr. W. J. Mayo and Dr. Franklin H. Martin, of America.

Dr. D. G. Hunter (Eastwood) offered to present to the University an old steel engraving of the late Sir Charles Nicholson. It was decided to accept the gift with thanks.

An invitation was received from the Imperial Social Hygiene Congress requesting that delegates be appointed to the second Congress to be held in October next at Wembley.

The examiners for the M.D. degree in the case of Dr. G. H. S. Lightoller (Professors J. T. Wilson and G. Elliot Smith) recommended that he be admitted to the M.D. degree with First Class Honours for his thesis entitled "Facial Muscles."

The following resolution of sympathy at the death of the late Warden, Mr. H. E. Barff, M.A., was passed, the members standing:

> That on the occasion of the lamented death of Henry Ebenezer Barff, C.M.G., M.A., late Warden and Registrar, the Senate of the University of Sydney desires to renew its tribute to his exceptional merits and services, to express its heartfelt sorrow that he enjoyed the well-earned rest from his labours for so short a period and to place on record its conviction that his name will be remembered along with those of the founders, the great benefactors and the most distinguished members of the University.
>
> That a copy of this resolution be forwarded, with assurances of sincere sympathy, to Mrs. H. E. Barff.

The date for the election of a Fellow of the Senate to fill the vacancy created by the death of Mr. H. E. Barff was fixed for Monday, July 20, 1925.

It was decided that the date for the Conferring of Degrees and Commemoration of Benefactors should be Wednesday, May 27, at 10.30 a.m., and that a conversazione should be held the same evening.

The following appointments were made:

Mr. G. H. Clarke, B.Sc., Demonstrator in Botany in place of Mr. A. H. K. Petrie, B.Sc., resigned.

Dr. T. R. Pearce, Temporary Lecturer in Physiology until the end of the year.

Mr. J. McGarry, as Part-time Demonstrator in the Department of Pharmacy, in place of Mr. Hannan, resigned.

On the recommendation of the Advisory Committee of St. Vincent's Hospital, the name of Dr. Walter Perry was submitted to the hospital authorities for appointment as Honorary Surgeon to the Out-patients' Department.

It was decided to permit the holding of a special memorial service in the Great Hall on Monday of commemoration week to commemorate University men who had died on active service and eminent members of the staff who have passed away during the previous twelve months. The service will be conducted by the heads of University colleges and the address will be delivered by the Vice-Chancellor (Professor MacCallum). The service will begin at 11 o'clock on Monday, May 25, 1925.

A letter was received from Dr. W. F. Burfitt in which he expressed a wish to present to the University the sum of £1,000 for the foundation of a scholarship to be known as the "Walter Burfitt Scholarship for the Advancement of the Study of Science." Grateful thanks have been expressed by the Senate for this generous donation made by a benefactor as an appreciation of the opportunities afforded him by the University during his studentship.

The following resolutions received from the War Memorial Executive Committee were approved subject to the proviso that the plans relating to the installation of the *carillon* in the tower should first be placed before the Buildings and Grounds Committee for consideration and report to the Senate:

> 1. That the Executive Committee receive Mr. Starmer's report and, whilst also of opinion that a specially designed campanile would be preferable, financially it is not possible, and desire to inform the Senate that the University tower can be made suitable to carry the *carillon* without spoiling the musical effect or the appearance of the University building.
>
> 3. That the Committee inform the Senate that it will accept the tender of Messrs. John Taylor and Company, of Loughborough, for a *carillon* of forty-nine bells but that the steel framework carrying the bells and all other details be supplied as for a *carillon* of fifty-three bells, it being understood that John Taylor and Sons will guarantee that the tower arrangements, as outlined by them, will be perfectly suitable and an artistic success assured, provided the tower is strengthened to support the bells.
>
> 3. That the work included in John Taylor's contract is as under:

Carillon of forty-nine bells	£8,933
Framed to carry fifty-three bells	1,540
Hand clavier	210
Practice clavier	230
Automatic operation of all bells	1,280
Ivory keyboard	240
Services of skilled foreman	375
Services of *carilloneur*	450
Lettering of bells	147
	£13,405

> 4. That in addition to John Taylor and Company's contract there will be:

Cost of carriage from wharf, Sydney, to University	£75
Erection of bells	700
Cost of alterations to University tower, and steel columns to carry bells, say ..	3,200
	£3,975

which will also be arranged for by the Committee.

5. That the total estimated cost of the work completed is £17,380 and that funds amounting to £17,397 are in hand.

It was further resolved that the tenders be accepted in the name of the chairman of the Executive Committee and that the following Sub-Committee for Buildings and Bells be appointed, namely, the Deputy-Chancellor, the Vice-Chancellor, Dr. Bradfield, Professor Wilkinson, Professor Holme and Judge Backhouse.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned have been registered under the provisions of *The Medical Act, 1915*, as duly qualified medical practitioners:

Adamson, Reginald Victor, M.B., B.S., 1925 (Univ. Melbourne), 41, Mathoura Road, Toorak.

Albiston, Leslie Howard, M.B., B.S., 1925 (Univ. Melbourne), 9, Goodall Street, Auburn.

Almond, Robert Lester, M.B., B.S., 1925 (Univ. Melbourne), 28, Douglas Street, East Malvern.

Barnaby, John Gowan, M.B., B.S., 1925 (Univ. Melbourne), 35, Chrystobel Crescent, Hawthorn.

Berryman, Cecil Bryden, M.B., B.S., 1925 (Univ. Melbourne), Parkenham Street, Echuca.

Box, Noel Edward Hamilton, M.B., B.S., 1925 (Univ. Melbourne), "Monalto", Union Road, Surrey Hills.

Bray, Lorna, M.B., B.S., 1925 (Univ. Melbourne), 223, William Street, Melbourne.

Brown, David Officer, M.B., B.S., 1925 (Univ. Melbourne), 19, Mercer Road, Malvern.

Brown, Keith Brayton, M.B., B.S., 1925 (Univ. Melbourne), 116, Wellington Street, St. Kilda.

Buchanan, James Mayo, M.B., B.S., 1925 (Univ. Melbourne), 7, Hopetoun Road, Malvern.

Burgess, John Norval, M.B., B.S., 1925 (Univ. Melbourne), 22, Denmark Street, Kew.

Burns, William James, M.B., B.S., 1925 (Univ. Melbourne), 109, Cecil Street, South Melbourne.

Carter, James Leontine Roy, M.B., B.S., 1925 (Univ. Melbourne), 13, Linacre Road, Hampton.

Casey, Edward William, M.B., B.S., 1925 (Univ. Melbourne), 84, High Street, Kew.

Chambers, Keith Leslie, M.B., B.S., 1925 (Univ. Melbourne), 9, Campbell Street, Sandringham.

Chittick, Blanche, M.B., B.S., 1925 (Univ. Melbourne), "Loddon," Turner Street, South Camberwell.

Cooper, Eric Leonard, M.B., B.S., 1925 (Univ. Melbourne), 14, Hutton Street, Thornbury.

Cowling, Inglis Hall, M.B., B.S., 1925 (Univ. Melbourne), 39, Anderson Street, East Malvern.

Davies, John Seymour, M.B., B.S., 1925 (Univ. Melbourne), 60, Avoca Street, South Yarra.

Dawes, Thomas Powell, M.B., B.S., 1925 (Univ. Melbourne), 14, Logan Street, Canterbury.

Deane, Edward Hayden Wilcox, M.B., B.S., 1925 (Univ. Melbourne), 3, Quat Quatta Avenue, Elsternwick.

Dickson, Cyril Hopetoun, M.B., B.S., 1925 (Univ. Melbourne), 26, Anderson Street, East Malvern.

Downie, Ewen Thomas Taylor, M.B., B.S., 1925 (Univ. Melbourne), 26, Queens Road, Melbourne.

Eccles, John Carew, M.B., B.S., 1925 (Univ. Melbourne), 55, Wills Street, Kew.

Fredman, Stanley Lewin, M.B., B.S., 1925 (Univ. Melbourne), 61, Wellington Street, Windsor.

Freemantle, Norman Franklyn, M.B., B.S., 1925 (Univ. Melbourne), 86, St. Helen's Road, Upper Hawthorn.

Goodman, Philip, M.B., B.S., 1925 (Univ. Melbourne), 37, Crimea Street, St. Kilda.

Gorman, John Sextus, M.B., B.S., 1925 (Univ. Melbourne), 211, Burke Road, East Malvern.

Grant, Jean Elma Doris Margaret, M.B., B.S., 1925 (Univ. Melbourne), K7, High Street, Windsor.

Greening, William Thomas, M.B., B.S., 1925 (Univ. Melbourne), 94, Bendigo Street, Prahran.

Griffiths, Norman James, M.B., B.S., 1925 (Univ. Melbourne), 86, Normanby Road, East Kew.

Grimshaw, Nigel Samuel, M.B., B.S., 1925 (Univ. Melbourne), 136, Robinson's Road, Hawthorn.

Hall, Eric Martin, M.B., B.S., 1925 (Univ. Melbourne), 81, Hope Street, South Yarra.

Henderson, Robert John Arnold, M.B., B.S., 1925 (Univ. Melbourne), 75, Tooronga Road, East Malvern.

Hughes-Jones, William Eric Archer, M.B., B.S., 1925 (Univ. Melbourne), 43, Kooyong Road, Caulfield.

Hunt, Bruce Atlee, M.B., B.S., 1925 (Univ. Melbourne), 11A, Wynnstay Road, Armadale.

Hurley, Joseph James, M.B., B.S., 1925 (Univ. Melbourne), 18, Carlisle Avenue, East St. Kilda.

Ingram, Mary Allison, M.B., B.S., 1925 (Univ. Melbourne), Clendon Road, Toorak.

Jacobs, Alfred Nailer, M.B., B.S., 1925 (Univ. Melbourne), 22, Suffolk Road, Surrey Hills.

James, Trevor Claude, M.B., B.S., 1925 (Univ. Melbourne), Melboure Hospital.

Joyce, Joseph Francis, M.B., B.S., 1925 (Univ. Melbourne), Barkley Street, Ararat.

Kay, Jean Grigg, M.B., B.S., 1923 (Univ. Melbourne), "D'estaville," Barry Street, Kew.

Kerr, Alexander James, M.B., B.S., 1925 (Univ. Melbourne), 137, Waverley Street, Moonee Ponds.

Kyle, Eric Walter, M.B., B.S., 1925 (Univ. Melbourne), Cassidy Street, Kalgoorlie, W.A.

Langlands, Francis Clive, M.B., B.S., 1925 (Univ. Melbourne), "Haldon," St. Kilda Road, Melbourne.

Loughnan, Francis Stanislaus, M.B., B.S., 1925 (Univ. Melbourne), 83, Gipps Street, East Melbourne.

Lynch, John Adrian, M.B., B.S., 1925 (Univ. Melbourne), 8, Royal Avenue, Glenhuntly.

Lynch, John Aloysius, M.B., B.S., 1925 (Univ. Melbourne), 12, Herbert Street, Albert Park.

Mackenzie, John Keith Douglas, M.B., B.S., 1925 (Univ. Melbourne), The Manse, Toorak.

Maling, Henry Coverley, M.B., B.S., 1925 (Univ. Melbourne), Waldemar Road, Ivanhoe.

Masel, Harry, M.B., B.S., 1925 (Univ. Melbourne), c.o. J. Masel and Son, Murray Street, Perth, W.A.

McLean, Melbert Ian, M.B., B.S., 1925 (Univ. Melbourne), Bacchus Marsh.

McMahon, Henry Ernest, M.B., B.S., 1925 (Univ. Melbourne), Royal Crescent, Armadale.

McMahon, James Edward, M.B., B.S., 1925 (Univ. Melbourne), Wangoom.

Morris, Matthew James, M.B., B.S., 1925 (Univ. Melbourne), "Hestercombe Flats," Walpole Street, Kew.

Nicholls, Ralph Whitburn, M.B., B.S., 1925 (Univ. Melbourne), 48, Suffolk Road, Surrey Hills.

Nicholson, Leslie Frank, M.B., B.S., 1925 (Univ. Melbourne), 32, Park Street, Northcote.

Nye, Charles Wason, M.B., B.S., 1925 (Univ. Melbourne), 194, Punt Road, Prahran.

Peacock, William Knox, M.B., B.S., 1925 (Univ. Melbourne), 62, Rathmines Road, Auburn.

Rait, Cecil William John, M.B., B.S., 1925 (Univ. Melbourne), 20, Fitzroy Place, Hobart, Tasmania.

Robertson, William Alfred Eric, M.B., B.S., 1925 (Univ. Melbourne), 18, Brennand Street, North Fitzroy.

Rosenthal, David Braham, M.B., B.S., 1925 (Univ. Melbourne), 8, Victoria Street, Ballarat East.

Saleeba, Aneice Samuel Joclen, M.B., B.S., 1925 (Univ. Melbourne), 2, Fletcher Street, Essendon.

Scott, Bruce Bayne, M.B., B.S., 1925 (Univ. Melbourne), 250, High Street, Malvern.

Sinclair, William George Gladstone, M.B., B.S., 1925 (Univ. Melbourne), "Strathearn," Thomastown.

Skelton, Esther Isabel, M.B., B.S., 1925 (Univ. Melbourne), Eleventh Street, Mildura.

Smith, Robert Martin, M.B., B.S., 1925 (Univ. Melbourne), 55, Mirams Street, Ascot Vale.

Spalding, James Atcheson, M.B., B.S., 1925 (Univ. Melbourne), "Golensheil," Woollert, *via* Epping.

Spencer, John Clark, M.B., B.S., 1925 (Univ. Melbourne), 87, Fitzwilliam Street, Kew.
Stack, Mary Josephine, M.B. *et* Ch.B., N.U., 1922 (Univ. Ireland), Colac.
Stewart, Basil Francis, M.B., B.S., 1925 (Univ. Melbourne), 647, Inkerman Road, Caulfield.
Tallent, Gordon Murray, M.B., B.S., 1925 (Univ. Melbourne), corner Mercer and Malvern Roads, Malvern.
Uglow, Arthur George Rongo, M.B., B.S., 1924 (Univ. Melbourne), Belle Avenue, Middle Brighton.
Wait, Leslie Proud, M.B., B.S., 1925 (Univ. Melbourne), 399, Glenferrie Road, Glenferrie.
Williams, Frank Winfield, M.B., B.S., 1925 (Univ. Melbourne), 436, Punt Road, South Yarra.
Wright, Grantley Alan, M.B., B.S., 1925 (Univ. Melbourne), "Rewa," Neerim Road, Oakleigh.

Additional Diplomas Registered.

John Horace Kelly, M.R.C.P. (Lond.), 1924.
William Langley Carrington, M.D., 1925 (Univ. Melbourne).
Kenneth Branston Burwood, M.D., 1925 (Univ. Melbourne).

QUEENSLAND.

THE undermentioned have been registered under the provisions of *The Medical Act of 1867* as duly qualified medical practitioners:

Bevington, William Macfarlane, M.B., Ch.M., 1924 (Univ. Sydney), Brisbane.
Chapman, William James, M.B., Ch.M., 1921 (Univ. Sydney), Winton.
Hopkins, Paul William, M.B., B.S., 1924 (Univ. Melbourne), Mackay.
Mater, Otto Waldemar, M.B., Ch.M., 1923 (Univ. Sydney), Thursday Island.
Punch, Thomas Sydney, M.B., Ch.M., 1923 (Univ. Sydney), Lowood.
Quinn, Thomas Robert, M.B., Ch.M., 1923 (Univ. Sydney), Rockhampton.
Dart, Ellice Ettie Peden, M.B., Ch.M., 1922 (Univ. Sydney), Sandgate.
Downes, Clement James, M.B., Ch.M., 1923 (Univ. Sydney), Brisbane.

TASMANIA.

THE undermentioned have been registered under the provisions of *The Medical Act, 1918*, as duly qualified medical practitioners:

Edwards, Ernest Richard, M.B., B.S., 1923 (Univ. Melbourne), Launceston.
Hamilton, John Bruce, M.B., Ch.M., 1924 (Univ. Sydney), Launceston.

Correspondence.

CHRONIC SINUSITIS.

SIR: I have laboured for years to impress upon the profession the importance of sinusitis in general disease, especially in children and while I agree with a good deal of what Dr. Pern sets forth, to much of it I cannot subscribe. I have yet to see a case of sinusitis which in my opinion produces a general infection if we except digestive disturbances from swallowing of muco-pus.

Headaches, recurring colds, asthma, bronchitis, hay fever so-called by the score, but rheumatoid affections, goitre, pyelitis, cardiac lesions not one has come under my ken.

The diagnosis of sinusitis upon which Dr. Pern depends, is loose and inaccurate and two of his patients that he showed me at St. Vincent's clinical meeting last year did not impress me as cases of sinusitis.

It would be important for Dr. Pern to demonstrate the permanent efficiency of colloidal manganese.

A radical operation on the sinus is a very slight affair if the surgeon is careful to remove as little of the anterior wall as possible. It makes the operation longer and more difficult, but the post-operative disturbances are considerably reduced. It seems to me that anyhow permanent drainage is important.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street, Melbourne.
Undated.

THE CONTROL OF SURGEONS.

SIR: In your issue dated May 9, 1925, Dr. E. S. Myers, Brisbane, criticizes your leader of February 21 concerning the surgical efficiency of the Australian medical profession, but he commits a worse error in that he lays down a policy without defining how it is to be carried out.

We would like to know how he proposes that the medical practitioner should be "hall-marked" as a surgeon.

It seems that we have been labouring under a delusion as most of us considered that we were already "hall-marked" by being granted the privilege—hard earned—of calling ourselves "bachelors of surgery" or *et cetera*.

To all of us who are proud of our profession, it must be obnoxious that criticism as has been recently directed towards the profession, especially the general practitioner, should have come from the medical profession itself.

Yours, etc.,

HAROLD CRAWFORD.

Chinchilla, Queensland,
May 15, 1925.

Post-Graduate Work.

PRIZE ESSAY ON THE PREVENTION OF MATERNAL MORTALITY.

THE MELBOURNE PERMANENT COMMITTEE FOR POST-GRADUATE WORK announced in August, 1924, that a prize of one hundred and fifty guineas would be awarded for the best essay on "The Causes and Prevention of Maternal Morbidity and Mortality." The Honorary Secretaries have received twenty-three essays. These essays have been referred to the adjudicators, Dr. J. H. L. Cumpston, Dr. J. W. Dunbar Hooper, Professor P. MacCallum, Dr. Felix Meyer and Dr. R. H. Morrison. It is anticipated that the result will be announced in August.

Research Work.

RESEARCH IN OBSTETRICS.

THE University of Melbourne recently received the gift of £10,000 from the Trustees of the Edward Wilson (*Argus*) Fund for the purpose of endowing research in the science of obstetrics. The Council of the University have referred the matter to the Faculty of Medicine. A committee has been appointed to deal with the subject. The members of the committee are Professor R. J. A. Berry, Dean of the Faculty of Medicine; Dr. R. H. Morrison, Lecturer in Obstetrics; Dr. H. C. Lloyd, the representative of the Women's Hospital on the Faculty; and Dr. C. H. Kellaway, Director of the Walter and Eliza Hall Institute for Research in Pathology and Medicine. Additional members are: Dr. Stanley Argyle, M.L.A., President of the Victorian Branch of the British Medical Association; Sir George Syme, Dr. Felix Meyer and Dr. R. H. Fetherston. Dr. J. W. Dunbar Hooper has been nominated by the Edward Wilson (*Argus*) Fund.

The first meeting of the committee was held on May 22, 1925, in the new B.M.A. Building, Brunswick Street, Melbourne. Professor Berry was elected the chairman, Dr. R. H. Morrison, vice-chairman, and Dr. J. W. Dunbar Hooper, honorary secretary and convener.

It is expected that the Council of the University of Melbourne will shortly be advised to advertise for a director of obstetrical research. The terms, fees, duration of the appointment and other particulars will be announced in the advertisement. Applications from all parts of the Commonwealth are expected. It is hoped that this generous gift and the fact that the members of the Victorian Branch and of the Faculty of Medicine are collaborating in this matter will result in a reorganization of obstetrical practice throughout the State of Victoria.

THE BOY SCOUT MOVEMENT.

THE MELBOURNE ROTARY CLUB has undertaken to appeal to the citizens of Victoria to raise the sum of £10,000 to enable the Boy Scout movement to be properly established. A Rotary Club Week for Boy Scouts will be held in the near future. In order that the efforts of the Rotary Club may be crowned with success various subcommittees have been formed and are now doing the preliminary work. It is scarcely necessary to plead in favour of the Boy Scout movement. It stands for good citizenship and the development of character.

We learn that a medical and dental subcommittee has been constituted. Its members are Mr. E. F. J. Bordeaux, veterinary surgeon, Dr. L. J. Clendinnen, Dr. J. M. Lewis, dental practitioner, Dr. R. Morrison, Dr. Fay Maclure, Dr. S. V. Sewell and Dr. Leonard Mitchell; Dr. G. C. Scantlebury is the Honorary Secretary. This subcommittee has issued a circular letter inviting members of the medical and dental professions to lend their assistance to the movement. We trust that the response will be widespread and generous. It is a patriotic call. The Rotary Club proposes to issue bonds of one shilling, two shillings and sixpence, ten shillings and one pound. Members are being asked to notify the Honorary Secretary that they are prepared to purchase these bonds.

Books Received.

CONTRIBUTIONS TO THE STUDY OF TUBERCULOSIS, by Research Department, National Jewish Hospital for Consumptives. Volume V. 1924. Royal 8vo.

FORENSIC MEDICINE: ILLUSTRATED BY PHOTOGRAPHS AND DESCRIPTIVE CASES, by Harvey Littlejohn, M.A., M.B., B.Sc., F.R.C.S. (Edinburgh), F.R.S.E.; 1925. London: J. & A. Churchill. Royal 8vo., pp. 270. Price: 15s. net.

Medical Appointments.

Dr. P. T. Torputt has been appointed District Medical Officer and Public Vaccinator, at Northampton, Western Australia.

Dr. A. H. Dunstan (B.M.A.) has been appointed Acting Quarantine Officer, at Warrnambool, Victoria.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii.

AUSTIN HOSPITAL, HEIDELBERG, VICTORIA: Honorary Physician.

DEPARTMENT OF PUBLIC HEALTH, NEW SOUTH WALES: Inspector-General of Mental Hospitals.

DEPARTMENT OF PUBLIC INSTRUCTION, VICTORIA: Oculist.

WESTERN AUSTRALIAN PUBLIC SERVICE: Medical Officer of Schools.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

JUNE 8.—Northern District Medical Association, New South Wales.
JUNE 9.—Tasmanian Branch, B.M.A.: Branch.
JUNE 9.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 11.—Victorian Branch, B.M.A.: Council.
JUNE 11.—South Australian Branch, B.M.A.: Council.
JUNE 11.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 12.—Western Australian Branch, B.M.A.: Council.
JUNE 12.—Queensland Branch, B.M.A.: Council.
JUNE 16.—Tasmanian Branch, B.M.A.: Council.
JUNE 16.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 17.—Western Australian Branch, B.M.A.: Branch.
JUNE 17.—South Sydney Medical Association, New South Wales.
JUNE 18.—Section of Pædiatrics, New South Wales Branch, B.M.A..
JUNE 23.—New South Wales Branch, B.M.A.: Medical Politics Committee: Organization and Science Committee.
JUNE 24.—Victorian Branch, B.M.A.: Council.
JUNE 25.—New South Wales Branch, B.M.A.: Branch.
JUNE 25.—South Australian Branch, B.M.A.: Branch.
JUNE 26.—Queensland Branch, B.M.A.: Council.
JUNE 27.—Eastern District Medical Association, New South Wales.
JULY 1.—Victorian Branch, B.M.A.: Branch.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-3.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.